

NETWORK

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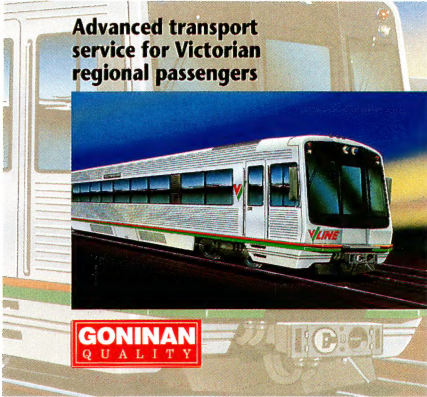
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FROM THE EXECUTIVE DIRECTOR

A more level playing field?

On February 26 last, the Prime Minister announced that his government was making available \$454 million over the next two years for railway works in Australia. Further details appear in this issue of *Network*.

I do not propose to comment on any political aspects of the Federal Government's announced plan. However, spending on public works in time of recession certainly conforms with the economic theories which formed part of my education — those espoused by J M Keynes. He saw that such spending could act as a counter-balance when other economic activity dips.

What does interest me, as a professional railwayman, is an outward sign that the Government is, for the first time in a long time, offering to the rail industry something which it has offered to our major competitors — road — freely during the last few decades. The philosophy behind road funding has been designed to slake the nation's thirst for more roads, often without regard to the cost. Sure, there has been deliberation between the choice of individual road projects — weighing up the perceived benefits of one against the other. But in total, there has been an avalanche of funds devoted to highway construction and a comparative trickle to new freight railways.

Network and the railway industry, have pointed to this lack of even handedness, on many occasions. This most recent announcement on rail funding, without a requirement to cost-justify every last cent, is welcome change. Buzz words such as "level playing field" are more easily understood by the community in general these days; they have had particular application in the field of transport where, even today, our competitors are arguing on the quantum of the amount they should contribute towards their permanent way. The field is now a little more level.

It is quite significant that the new funds are being made available just as our fledgling National Rail Corporation spreads its wings. That

body is bound to build upon the reforms and productivity gains which are already apparent within Australia's railway systems, particularly in mainline freight operations. NRC's goal of commercial success depends upon that building process.

When plans for NRC's establishment were announced, it was stressed that projects such as the construction of a standard gauge railway between Melbourne and Adelaide would be dependent upon the NRC's commercial judgement. Now, the decisions the NRC will have to make on some of its projects will be that much easier — with specified funds made available for projects which will undoubtedly make rail a more efficient part of Australia's transport industry.

When the works are complete, and their advantages realised, then many of the peripheral, but nonetheless important, benefits of rail transport can be brought to fruition. Our environment will be cleaner, our pollution levels lessened, the trauma of our road carnage reduced.

It is significant that the quantum of funding allocated to roads under the Prime Minister's plan is greatly in excess of that provided for rail.

But I perceive a key advance in the very act of making funds available to rail, at all. Australia's railways, strengthened through the development of a National Rail Corporation, might use this as a breakthrough to seek further funds in the future.

And, in the broader sense, let us hope that the economics of John Maynard Keynes work to bring Australia out of a most unpleasant economic situation. □

Michael Schrader

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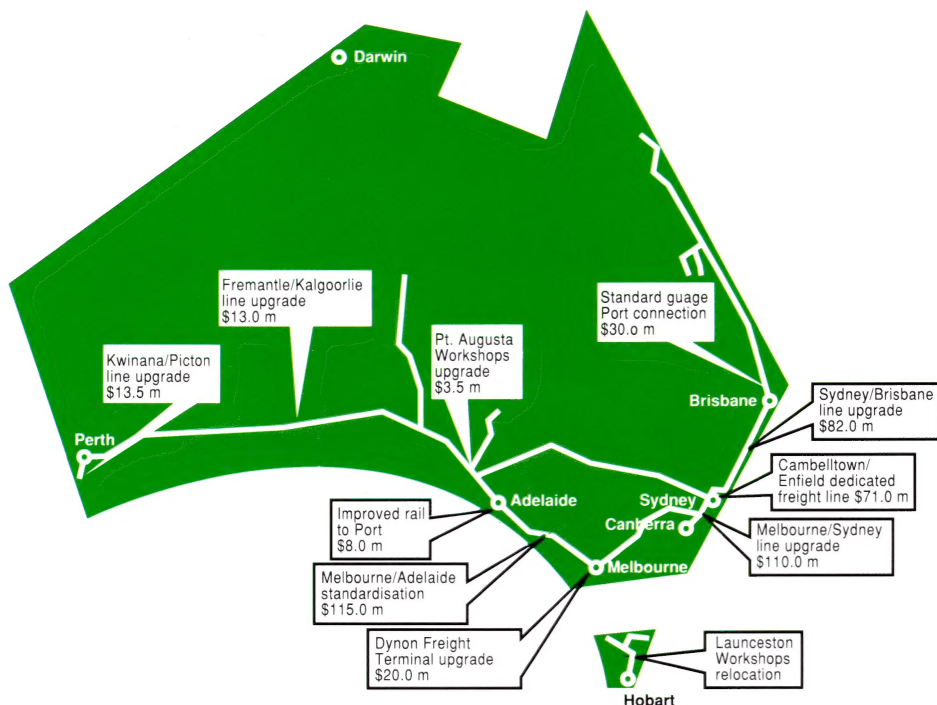
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groundwork NRC

Every evening two long freight trains like this one at South Dynon, Melbourne, leave for Adelaide on the non-standard broad gauge line.



The Australian Government has highlighted specific projects in its recent allocation of finance for the development of rail infrastructure across the nation thus laying the groundwork for the National Rail Corporation Limited to operate on a competitive commercial basis.

As a commercially-run company the NRC sees itself becoming a fair and competitive alternative carrier to road transport. It expects to break even within three years and to become totally self-supporting after five years.

In the next few years it plans to assemble its own asset base comprising terminals, track, signalling systems and rolling stock sufficient to ensure its commercial viability. Where ownership is not viable leasing or other arrangements will be entered into.

Already it is developing a fully-computerised national customer service centre as a 'one-spot' point of contact for national freight. The information technology contract for this was let to BHP

Information Technology with the Victorian PTC and ADL Consulting Pty Ltd as sub-contractors.

Australia's Prime Minister, Paul Keating, in his recent economic statement to the Federal Parliament said:

"The success of the NRC will hinge upon its ability to present an integrated approach to the interstate freight task, to obtain large productivity improvements, and to target effectively increased capital investment." In fact, studies made available to the NRC have identified that average productivity gains of at least 35 per cent are possible.

In the next two years

Mr Keating's statement included the following major financial allocations. \$454 million is to be provided during the next two years to complement the NRC's 10-year \$1.7 billion investment program to provide, by 1995:



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- ☐ A 12-hour terminal-to-terminal train transit time between Sydney and Melbourne;
- ☐ A 16-hour terminal-to-terminal train transit time between Sydney and Brisbane.

At the same time, funding of effective rail links to ports in Brisbane, Fremantle and Adelaide and the improvement of intermodal links in Melbourne will ensure that mainline efficiency gains are not frustrated by handling delays at trans-shipment points.

"In order that the Government can be assured that this additional investment in rail is used to full effect, several conditions will need to be met before funds will be released," the Prime Minister said.

These conditions require:

- ☐ Firm commitments from the unions to support a "greenfields" NRC enterprise award incorporating labour arrangements which are already set out in the NRC Shareholders' Agreement;
- ☐ Firm commitments from State governments to accelerate the process of reform in their rail systems, including the early adoption of relevant recommendations from the Industry Commission's 1991 *Report on the Rail Industry*;

- ☐ Where additional rail investment is channelled through the States, that the NRC must agree to design and standards to apply before contracts are let; and that all contracts are to be subject to competitive bidding.

To NRC standards

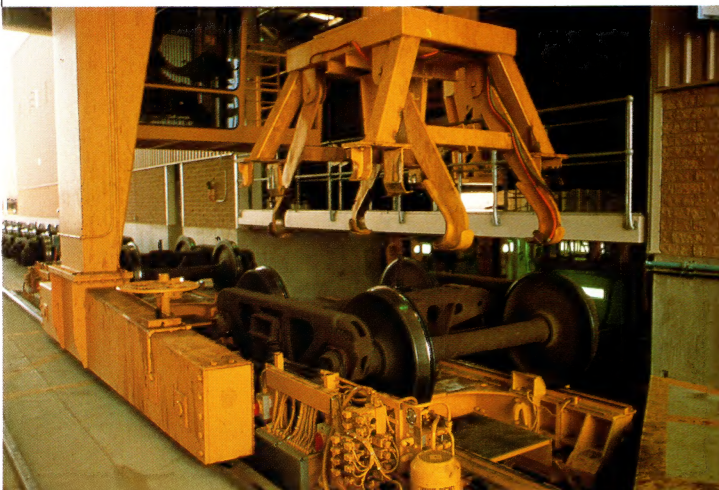
On completion of each project, the upgraded asset is to be managed and maintained to the standards specified by the NRC, and appropriate recognition given to the Australian Government's equity in the Corporation for assets that become part of the NRC network.

\$115 million will fund the standardisation of the line between Melbourne and Adelaide via Ballarat. No longer will east-west freight be delayed by break of gauge at Adelaide, and faster transit times will permit a major rationalisation of national freight flows by the NRC.

Upgrading the rail corridors between Melbourne and Sydney (\$181 million), and between Sydney and Brisbane (\$82 million), will permit the NRC to operate longer trains, with reduced transit times and greater reliability for its customers.

Included in the Melbourne-Sydney corridor funding is \$71 million to the NRC for construction of a new dedicated freight line in Sydney from Campbelltown to Enfield, where the Corporation is

TRACKS



THE BOGIE CHANGE IN SOUTH AUSTRALIA WHICH ENABLES FREIGHT WAGONS ON THE BROAD GAUGE LINE TO CONTINUE THEIR WESTWARD JOURNEY ON STANDARD GAUGE WILL NO LONGER BE NECESSARY.

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proposing to spend some \$40 million over the next two years for an efficient freight terminal.

This will allow the NRC to handle freight in Sydney at its own terminal, and to carry it through Sydney without the delays inherent in having to operate over Sydney's urban passenger rail network.

Together with new work practices, investment on the Sydney-Melbourne corridor will reduce transit times from a minimum of 13½ hours to a reliable 12 hours by 1994, thus allowing rail to compete for a greater share of business in Australia's largest freight corridor.

Sydney-Brisbane freight will benefit from greater reliability and a transit time reduced from 18 to 16 hours (similar to road transport), thus bringing major benefits to Queensland, particularly to those living in the rapidly growing south-east.

Standard gauge to port

In addition, Queensland will benefit from a Commonwealth contribution of up to \$30m to the cost of providing a standard gauge rail connection to the port of Brisbane. The remainder of the \$60m cost of this project is to be provided by Queensland and the NRC. This connection will enhance the ability of shippers to use Brisbane as a port of entry.

A further \$20m will go towards other transport infrastructure, including development of the port of Townsville.

In Melbourne, the Commonwealth will provide \$20m to upgrade the rail freight terminal at South Dynon.

\$5m is available to build direct road connections from South Dynon to Swanson and Appleton Docks in Melbourne, so that costs and handling time of the sea/rail transfer of freight can be significantly reduced.

In Adelaide, \$8m is for a rail loop at Outer Harbour which will allow block trains to serve the port. This is a crucial first step in SA's plans to develop an international-standard port terminal concentrating on the efficient handling of urgent containers. The remainder of the \$100m required for the port upgrading is to be met from private sources once the rail link is in place.

In WA, \$13m is for rail transfer improvements at Fremantle's North Wharf to accommodate longer double-stacked trains and infrastructure improvements to the mainline track between Fremantle and Islington in SA.

Further funds of up to \$13.5m will be allocated to WA to duplicate and improve the effectiveness of the Kwinana-Picton line.

The Australian Government's investment program also includes \$11 million for key Australian National rail workshops.

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The public face

RAILWAY STATION BUILDINGS

By PAUL DAVIES

Paul Davies is an architect and heritage consultant. This article is based on a paper he presented at last year's Railway Heritage Conference in Sydney.

The conference was organised by the Australian International Council on Monuments and Sites (ICOMOS) Inc. The State Rail Authority of New South Wales recently has taken steps to refurbish major country railway stations like Cootamundra under a \$26 million program designed to recapture some of their former glory.

The railway station is the public face of the railway system. It is the first image the train traveller obtains of the experience of travel by train and has reflected the rise and decline of the railway system from its inception to the present day. Most people have had some contact with railways either through travel or by seeing railway buildings as civic buildings.

For many people, particularly older people for whom train travel was the major form of transport, arrival at a railway station marked the

commencement of a significant journey often taking a considerable period of time.

To serve these customers the railways provided a high level of service and facilities as seen in substantial station buildings, the provision of refreshment rooms and accommodation and the provision of sleeping trains and buffet facilities en route.

For many others the railway station signifies the routine of work and has determined the pattern of development in their suburb or district.

► FROM PAGE 10

Ministerial followup

Federal Land Transport Minister, Bob Brown in a following statement to the Prime Minister's said faster transit times would allow a major rationalisation of national freight flows by the National Rail Corporation (NRC). Greater reliability and cheaper transit costs are expected to flow to freight forwarders. The new Adelaide-Melbourne standard gauge line will follow a route via Ballarat. The project includes two major components:

- ☐ Construction of a dedicated standard gauge freight line from Melbourne to Bacchus March to minimise congestion problems (\$40 million); and
- ☐ Modifications to tunnels and curves in the Adelaide Hills to improve transit times and allow double-stack container operations (\$15 million).

A \$21 million program to replace worn wooden sleepers on the railway between Adelaide and the Victorian border with concrete sleepers will be incorporated into the standardisation plans.

Grain from north-west Victoria shipped through Geelong would continue to travel via Ballarat to Geelong, using a section of main line converted to broad gauge and standard gauge (dual) operation. Arrangements for rail passenger services to Ballarat

along the standard gauge track will need to be considered by the Victorian Government, Mr Brown said.

Mr Brown said that at Port Adelaide a rail loop consisting of four tracks would be built under the port cranes at Outer Harbour so that long Superfreighter 'block trains' can be used at the port. This would allow fast transfer of containers and their transportation to and from the port along a vastly improved standard gauge railway line linking Perth and Brisbane, via Melbourne.

"The remainder of the \$100 million required for the Adelaide port upgrading is to be met from private sources once the rail loop is in place. Expressions of interest are being sought for the non-rail component," he said.

Work on the Sydney-Brisbane track upgrading would start next financial year (1992-93) and take two years to complete. The time taken for freight trains to travel the journey would be reduced by two hours to just 16 hours.

New South Wales inter-city passenger train timetables would improve also.

"Not only will freight forwarders benefit from faster travel in times, they will also have the option of consigning exports via the Port of Brisbane along a new \$60 million standard gauge rail link from Acacia Ridge to the port at the mouth of the Brisbane River. Rail's share of the Sydney-Brisbane freight is expected to jump from 35 per cent to 45 per cent," Mr Brown said. ☐

of railways

THEIR CONTRIBUTION TO ARCHITECTURE

Station Master's house, Uralla.

The station and its environs illustrates more clearly than any other form of railway structure the development of the railway system and consequently the development of the State of New South Wales and unlike most building types in public ownership can be easily accessed, interpreted and understood in its current form.

The current railway system is probably the most significant living museum in the State and the railway station is the most visible and only easily accessible part of that system. A number of histories and theories of the development of railway architecture have been proposed. From these it appears that the thrust of development occurred in several major stages. I have grouped them into the following approximate periods: 1854-1888; 1890-1920; and post 1920, all of which represent major shifts in policy or phases of development.

The period from the commencement of railway construction to the Railway Act of 1888 was one of rapid expansion and confidence illustrated by the construction of a range of significant civic buildings to serve as railway



stations. The period was marked by the use of building styles and construction techniques that derived from English practice or were taken directly from commercial construction and applied with little or no modification to railway buildings.

Materials included the use of stone, ornamental brickwork, slate for roofs, substantial joinery often of cedar, decorative cast iron and some use of stained glass in windows.

The style of the buildings was contemporary with current commercial design, and the use of landmark motifs such as clock towers, unusual roof forms along with decorative plasterwork to pilasters etc, set the buildings apart as significant civic buildings often only rivalled by the local town hall. The predominant style was High Victorian Italianate.



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Mudgee railway station built in 1884 (top) from the street. Rail-side view of Petersham (centre) erected one year later. Rydal station (lower) shows its quiet, country-like charm. It contrasts dramatically with the imposing facade of Tenterfield station (top right).



On a lesser scale buildings at less important sites although not having the same level of decoration and of more modest scale were usually the most significant building in the community, constructed of brick or stone, again with the use of decorative cast iron or similar elements.

The layout of the buildings while of necessity being linear to allow easy access to the platform had not abandoned more traditional forms with many sites having a two-room depth in the buildings. This is particularly seen in the early combined residence and station buildings. A characteristic of early station buildings was the column

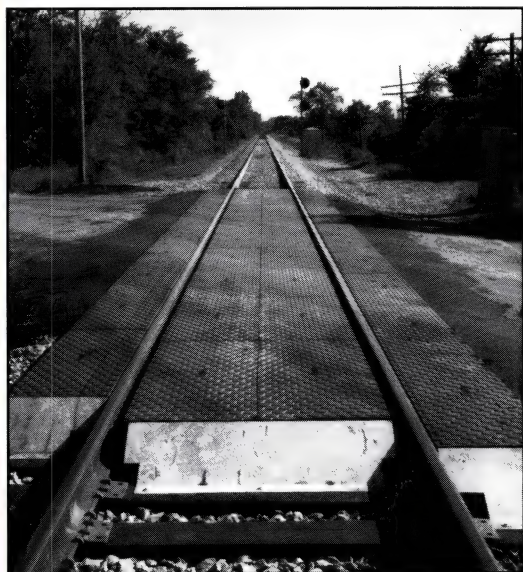
supports to the platform awning, set back from the edge of the platform to avoid danger to open doors on trains, which were later abandoned in preference for column free space.

Another major design feature of the early buildings which derived from their direct borrowing from English

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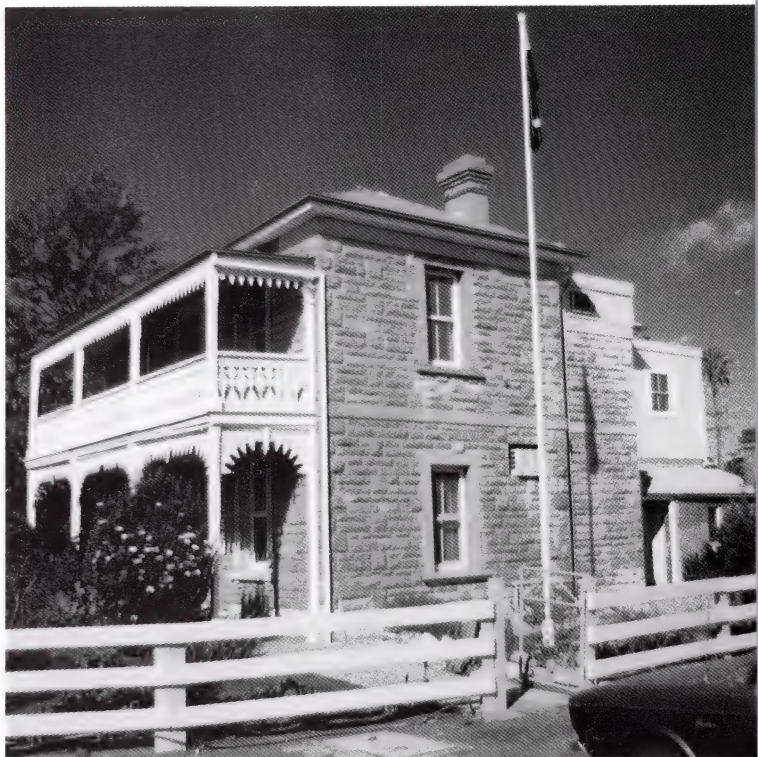
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FORMERLY THE STATION MASTER'S RESIDENCE (RIGHT) AT DUBBO. STREET-SIDE VIEW (FAR RIGHT) OF ALBURY RAILWAY STATION ON THE SYDNEY-MELBOURNE LINE. LIVERPOOL STATION (LOWER) WITH ITS WOODEN VERANDAH POSTS AND CENTRAL BAY WINDOW.



practice was what has been called the 'wayside station'. This is a station with one platform face only and a street or public access side.

For single line operation, which was the form of most early stations, this was the obvious solution, but for duplicated lines at more major locations the practice developed of providing two wayside stations opposite each other. This allowed street access to both platforms but resulted in the need to construct two sets of facilities. Often one was larger than the other with the major facilities on only one platform. In these buildings the public face does not give any indication of what awaits on the other side of the building.

The emphasis in design was primarily on the street facade, but also on the platform face. The platform face became progressively less important in the design of station buildings as this side of the building became recognised as part of the operation of the system rather than the public facade.

The emphasis was then placed more on ornament under the awning where it could be seen by travellers.

Buildings from this period were generally symmetrical with a central entry linking street to platform with a separate transverse gable roof to mark the entry point. It was common to provide a circular drive in front of the building with landscaped gardens. Often the building was located at the end of a major street or focal point of



the town, although this was not always possible. The location of the station in the town is important in understanding the development of the town and the impact of the railway on the place.

All of these characteristics could readily be applied to any civic building of the time and illustrate the probable desire of the early railway builders to establish confidence in railway travel as a normal part of life.

During this early period there was some use of standard designs, particularly on a series of stations on a line (Goulburn-Cooma line 1885-89) where a similar design was used on intermediate stations. However the more major stations were highly individual in character and design. It is also clear that the less important

buildings had a consistency of design that suggests one designer.

The form of the early station buildings, both substantial and simple showed little adaptation from existing building traditions that existed prior to the construction of railways. This can be even more easily seen in the service buildings constructed in the early years of railway development.

The new technology of railways which demanded a new approach from engineers did not search for a new architectural expression. This was evidenced in the use of accepted architectural styles and forms. The railway did not have a tradition of building on which to draw and the initial input was into the development



of the technology rather than to an appropriate built form.

A period of austerity

From 1888 the whole operation of railways changed. The Railway Act brought a change of leadership, an import of expertise from Great Britain in the form of a new chief engineer and commissioner and a re-examination of the method of construction and the type of buildings provided. It led to a period of austerity, an emphasis on the ability of each line to pay its way and to have facilities that were appropriate to the likely return of the line and a desire to open up the more remote areas for agriculture at low cost.

It also marked a change in the planning for new railways as the commissioner was given responsibility for selection of routes and station sites, removing the political influence that had been prevalent in earlier years and allowing the development of New South Wales in a more organised manner. This resulted in the introduction of standard buildings for most locations, based on English prototypes and a more utilitarian approach to design and layout.

The major changes were:

- ☐ Buildings were nearly always linear and one room deep with the major access from the platform and often no rear access so that the emphasis in design was to the platform face of the building and not the public face,
- ☐ The building form was simpler with either a simple gable or skillion roof and awning only to the platform face. Some buildings at more major

centres had more elaborate forms, but were generally simpler than earlier buildings,

- ☐ Construction methods and materials were simplified with the use of either brick or timber depending on the importance of the location and generally the use of corrugated iron roofs,
- ☐ The introduction of the cantilevered awning to eliminate platform columns, a direct copy of English practice,
- ☐ The introduction of the island platform with either footbridge or subway access and the use of dual awnings on either side of the building again to minimise construction,
- ☐ The incorporation of all facilities in the one building on the platform.

The first standard island buildings were erected on the suburban line between Redfern and Strathfield of timber construction. These were soon superseded by more substantial brick buildings erected on the Canterbury line around 1895. These buildings were large, well detailed and impressive but were quickly superseded by more austere brick buildings with much of the detail removed and generally of smaller scale.

These standard buildings were developed as both island platform and wayside platform designs and were used extensively during the 1890s and early 1900s. After the turn of the century a series of standard designs was issued which included the brick standard buildings and a series of timber standard buildings, mainly for country use. It appears that they were used from around 1907.

Three new types

The commissioner also introduced three new types of construction which had a profound effect on the buildings constructed.

These were: connecting cross country lines linking major centres; duplications and deviations on major trunk lines to improve the service resulting in new station sites and buildings along with extensive adaptation of existing buildings and sites for the new track arrangements, and the introduction of 'pioneer' railways which were low cost minimum construction lines laid in the flatter western districts with minimal or no facilities except for the construction of a terminus station (on branch lines). The buildings on these lines were generally simple timber structures varying from an open skillion roof timber waiting shed to a small gable roofed station with offices and parcels office.

One of the particularly interesting results of the change of direction in design of buildings from the 1888 period was the way in which existing buildings were extended or altered. Generally new work was simply added to the existing building in the contemporary style or design with no attempt to match construction or detail. On some buildings this has resulted in three or four distinct styles and forms on the one building.

When combined with the alterations to platforms, often the addition of a rear awning for duplication of the line, the addition of footbridge and other on-platform structures, these sites display a complete development of the railway



system, particularly as many of these structures no longer have a use within the railway system reflecting the decline of staffing and needs in those areas.

These structures clearly demonstrate how the railway system coped with increased demands and could incorporate happily a variety of styles.

The last stage of railway development was in the period from around 1920. The main railway network was largely in place by this time and the work carried out after this date was the addition of small branch lines, some suburban lines, connecting lines and the completion of the north coast line.

The period was typified by the use of standard buildings of a highly utilitarian form constructed at major sites from brick or prefabricated concrete and at minor centres from concrete or timber.

There was also a change in the function of many country station buildings to a concentration on freight rather than passenger facilities.

This was closely related to the rise in the use of the motor car and road transport and the decline in the use of country passenger services. With this came a change in the community's perception and reliance on rail transport and the station started to lose its place of prominence in the town and

gradually the station and railway declined in importance.

In later years the additions carried out to station buildings have tended to be less substantial and not well considered. Typical of this would be the infilling of verandahs or courtyards to provide additional low cost space. Unfortunately the worst examples of this have occurred in the last 20 years.

Significance of stations

The significance of station buildings and their surrounds is not limited to public perception of those buildings when embarking upon a journey. Railway buildings, as part of the State's public architecture, can have significance in a range of areas.

Some of the ways in which station buildings can illustrate significance are as follows:

They can indicate the importance of the location by the size, style and materials of construction of the buildings, and local aspirations and civic pride for example in the way the station precinct is landscaped and looked after or by the scale of the building in relation to the size of the location it is servicing.

They can illustrate the development of the location and development of the State. This can often be clearly seen in the fabric of the station buildings and structures showing sequential changes

to the building as the need for additional space and services has developed.

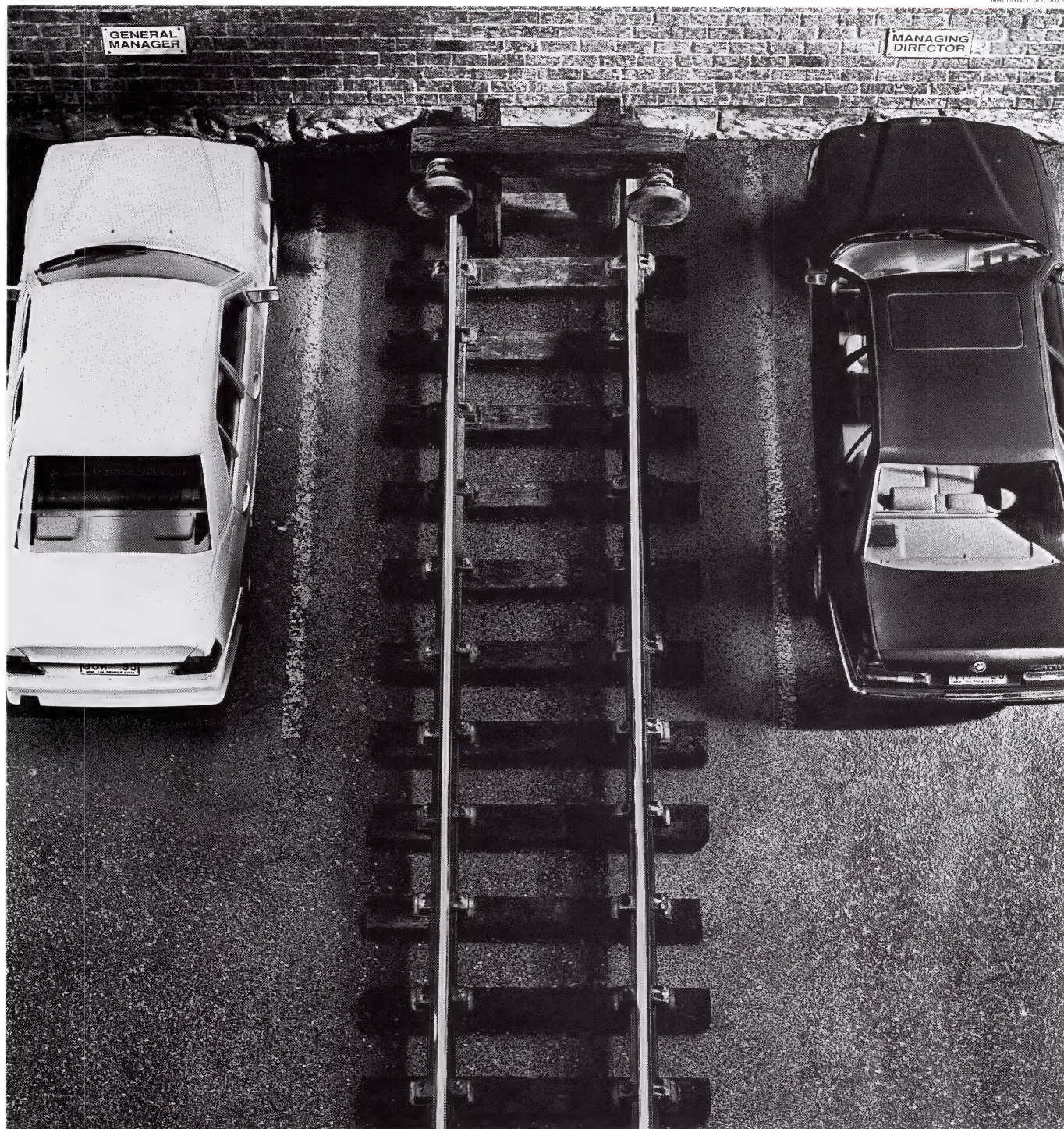
They can demonstrate changes in technology. By comparison of sites developed at different times in the evolution of the railway system it is possible to see how the operation of the railway system has altered.

They can illustrate how State policies have determined the location of lines and stations, for example as seen in interstate rivalries in the siting and construction of major station buildings in significant trade locations near State boundaries.

They illustrate the development of a 'style' of railway architecture. Early railway buildings were taken virtually without adaptation from the civic style of the day. As the railways developed the station building became more closely related to the function of the railways, became more utilitarian and generally cheaper to construct.

The main southern line between Goulburn and Albury was developed between 1869 and 1881. Major sites such as Goulburn, Harden, Cootamundra, Junee, Wagga Wagga and Albury have remained largely intact even though many of the passenger facilities such as refreshment rooms and accommodation have been closed.

These also represent the major early buildings that are significant civic buildings in their towns. □



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TRACKS

HAULING THE MIDNIGHT OIL TO WODONGA

Each evening during the week, just as the sun is farewelling the day with a spread of colour across the western sky, the oil train leaves Corio on Port Phillip Bay for its all-night run north across the plains leading from the sea and up through the foothills of the Great Diving Range to the border city of Wodonga.



Evening departure from the refinery terminal.

As many as 20 wagons, huge cylindrical tankers each holding from 32,000 to 67,000 litres of refinery products sometimes make up a train. Between the locomotive and the first wagon is a 19 metre long flat-top to create a safety gap as required by regulations. Another flat-top is dragged behind.

From a distance low on the horizon it appears almost as if the engine has been separated from the line of wagons and they are following obediently behind under their own power. It is not a fast run to Wodonga; the train's speed is only about 80 km/h. The safety of the crew and the train's volatile cargo have priority.

At about 4 a.m. the train begins to run its wagons into the bulk storage sidings operated by the various oil companies at Wodonga. Here the wagons are emptied and made ready for their journey back south. The petrol now is ready for the addition of brand name additives and for the road tankers to carry it to service stations and farming properties on both sides of the Murray River.

As many as 15 V/line Freight oil trains operate each week serving Wodonga, Horsham, Swan Hill, Shepparton, Barry's Beach and Mildura. A service to Bendigo is next in line. One train can deliver \$500,000 worth of oil refinery products. The two refinery loading points are at Altona and Corio. The Shell Australia refinery at Corio sometimes loads three oil trains a day. It can take up to four hours to fill one train.

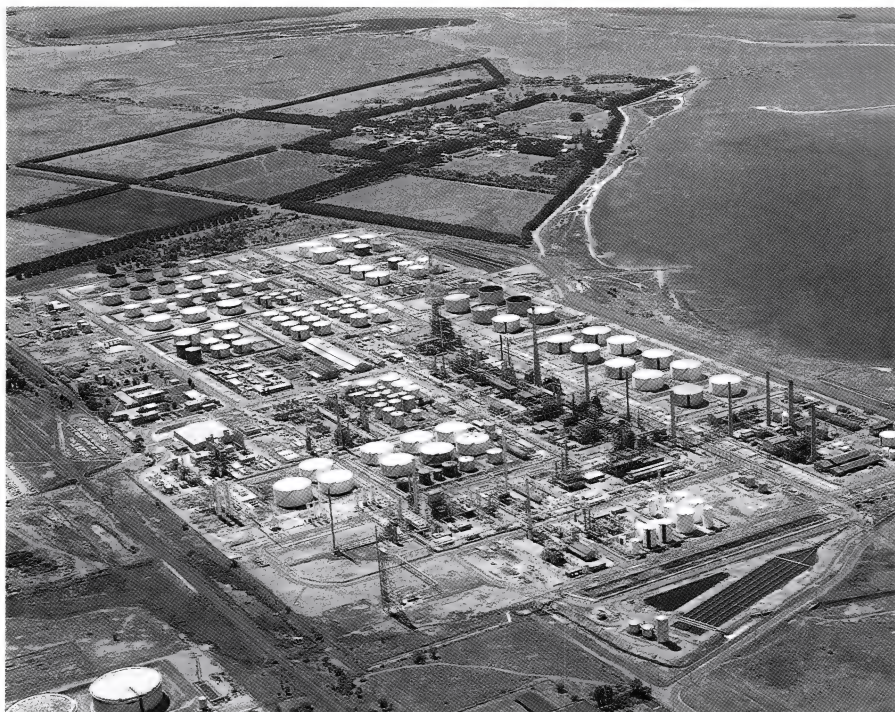
Each loading bay has four outlets for each product — unleaded petrol, super grade petrol, and diesel fuel.

The oil refinery at Corio, built in 1951, now occupies 120 hectares and has an additional 125 hectares of adjacent land for expansion and as a buffer zone. Distillation of crude oil commenced in 1954, and since then new plants have been added to make a whole range of specialised products including LPG, kerosine, solvents, gasoil, lubeoil, bitumen, fuel oils, sulphur and polypropylene pellets.

During normal operation the refinery directly employs about 780 people, but this number can double during periods of major expansion.

Five million tonnes of crude

Processing about five million tonnes of crude oil annually the Corio refinery is the larger of Shell's two Australian refineries; the other is at Clyde near



Sydney. The crude oil processing capacity of all Australian refineries is about 30 million tonnes per annum. Shell's largest refinery near Rotterdam in Holland can process up to 20 million tonnes a year.

At Corio there are 14 kilometres of roads and 400 kilometres of pipeline. To the casual visitor any refinery at first seems a maze of pipeline. It takes 300,000 tonnes a day of cooling sea water and 5,000 tonnes a day of fresh water to sustain the refinery operation. All water is cleaned through an interceptor system before being discharged into Corio Bay.

More than six million litres of petrol a day is produced at this Shell refinery. It has its own jetty running almost a kilometre out to sea from where the large sea-going tankers discharge crude mainly from the Middle East. This trade has diminished substantially with the advent of Bass Strait oil and now between 80 and 90 per cent with the crude intake is piped from the Bass Strait off-shore rigs.

In recent years V/Line Freight has worked closely with Shell and other oil companies to upgrade the rail transportation of oil products; wagons have been refurbished, rail sidings and facilities have been modernised. Coordinator of the dedicated petroleum rolling stock at V/Line headquarters in Melbourne, Brian Nicholson, said 113,000 tonnes of liquid petroleum products were transported to the Ampol and Shell storages at Wodonga last year by rail.

IT TAKES UP TO
300,000 TONNES OF
COOLING SEA WATER
AND 5,000 TONNES OF
FRESH WATER A DAY
TO SUSTAIN
OPERATIONS AT THE
CORIO REFINERY.
ABOUT 90 PER CENT
OF ITS CRUDE INTAKE
IS PIPED FROM THE
OFF-SHORE RIGS IN
BASS STRAIT.
IN VICTORIA, 15 OIL
TRAINS LEAVE
REFINERIES AT
ALTONA AND CORIO
EACH WEEK FOR BULK
DISTRIBUTION
STORAGES AROUND
THE STATE.
TRAINS OFFER A
SAFE CROSS-
COUNTRY SERVICE.
DISTRIBUTORS
OPERATE ON LESS
THAN .32 PER CENT
EVAPORATION LOSS
DURING TRANSIT.

TRACKS

“V/Line Freight works out an annual commitment each year with the collective representatives of Shell, Ampol, BP, Mobil and Caltex. The companies provide a forecast of the tonnage to be moved by rail and an indication of what new services they would like rail to provide,” he said.

“There are many hundreds of tanker wagons in the pool, some privately-owned by the companies and others leased out by V/Line. We now handle almost 600,000 tonnes of bulk petroleum a year for all the major oil companies.

“V/Line freight took the initiative in proposing new service plans to the oil companies which for years had been left to develop their own means of distribution, and as a result, there have been sweeping changes in this area. The social and community safety advantages of moving petroleum by rail are obvious.”

The oil train service involves a daily interface with V/Line Freight’s customers — the major oil companies. The co-ordinator telephones them each day after the companies have telephoned their distribution outlets and secures an indication of product tonnages from which is calculated the number of rail tankers necessary to make up the next trains. The train space is booked and a check is made the next

day to make sure it is on site and ready for loading.

Wagons are correctly labelled under the regulatory requirements for hazardous materials. Couplings are the ‘dry brake adaptor’ type and are very safe. Wagons have pressurised vents to bleed off petrol vapour automatically and there is some loss through vaporisation in transit. Tonnages that leave the refineries can weigh-in short at destinations, but the oil companies have devised a system of averaging in consultation with their distributors which takes care of the financial aspects in this regard.

V/Line Freight is having vapour

Vapour recovery units

recovery units fitted to tanker wagons as part of upgrading work. As liquid petroleum flows into a tanker it displaces the residual vapour. The recovery units will help to avoid this waste and improve safety. Easier loading and discharge wagon connections are also part of upgrading.

Away on the northern border of Victoria nestling on the southern side of the Murray River is the City of Wodonga, part of the twin-city Albury-Wodonga development project which has attracted Federal Government and private enterprise finance. Wodonga is

a major staging point for petroleum distribution serving Holbrook in New South Wales to the north, Wangaratta to the south, Urana to the west and Khancanban to the east — with on-forwarding bulk transport by road to Wagga Wagga, Temora and West Wyalong.

A major operator in this vast distribution network is North Eastern Petroleum Pty Ltd where Managing Director David Bent and Operations Manager Neville Farrugia are at the receiving end of the oil trains from Corio. Their bulk storage and distribution siding is manned from 5.30 a.m. to 11 p.m. most days.

“We have just improved the lighting to help us cope with the dark hours,” Neville Farrugia said. “Safety is always a major concern. Static-buildup with rail transport has to be grounded. Most of our clothing is anti-static. Static straps are hooked up to each wagon before discharging begins. Rust can cause a disruption to the flow of electricity and it is a major threat at any time.

“Atmospheric conditions are sometimes a factor and we postpone unloading the tankers when forked lightning is in the vicinity.

“We have to operate on less than a .32 per cent evaporation loss during transit.”



V/Line Freight locomotive ready for the oil run.

FIRST WE MOVED HEAVEN AND EARTH.



Never let it be said that V/Line Freight doesn't go out of its way to solve a problem. In the case of Australian Paper Manufacturers we moved heaven and earth before lifting an ounce of pulp.

This was the challenge; the south-east corner of South Australia is an important source of pulp for APM. Though just over the border from Victoria, it is under the control of V/Line.

While the pulp is in S.A., the paper mill is in Melbourne. And two years ago APM wanted to cross the intervening 512 kms as cheaply and efficiently as possible.

V/Line's men on the spot attacked the problem like a couple of terriers. At first Philip Petersen, APM's national distribution manager, was sceptical.

'The wagons didn't suit our product.' V/Line searched out the right ones and custom-built them.

'The pulp couldn't be secured without damage.' V/Line developed a method of

tying it down safely.

'The cost would be too high.' We burnt the midnight oil to make sure it wasn't.

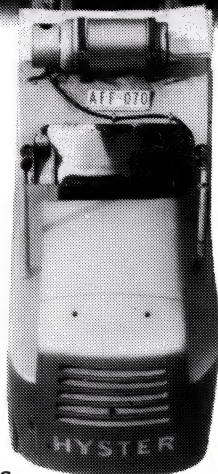
Scepticism turned to admiration as the service slipped into place. And over two years later it is still running smoothly.

Says Philip Petersen, 'I take my hat off to them. A number of dedicated people worked incredibly hard to understand the nature of our business.'

In all V/Line controls the movement of 150,000 tonnes of pulp and paper every year, much of it on a daily contract train from Gippsland.

Rail's clockwork reliability lets Philip sleep at night. He knows V/Line will take care of his paper, delivering it on time, for low cost and in top condition.

What V/Line did for APM we can do for you. To find out how we will put you in control of your freight, call us on 619 5500 or (008) 136 740.



V/LINE PUTS YOU IN CONTROL OF YOUR FREIGHT.

TRACKS



Garry Pollard connects a discharge line to a tanker outlet valve at North Eastern Petroleum, Wodonga. Tanker wagons (lower) await their turn at the NEP terminal.

North Eastern Petroleum says V/Line Freight's delivery during the past 18 months or so has been excellent helped by a maintenance of very good customer relations. N.E.P. says its business is about 40 per cent farming properties, 40 per cent industrial warehousing and factory, and 20 per cent to the petrol retail network. The company's most famous customer is actor Mel Gibson who has a property outside Wodonga.

"The storage capacity on most farms is limited only by the insurance coverage which can be obtained," Neville Farrugia said. "Some farmers have storages for 60,000 litres of petrol. About half the farm storages are underground; local authorities would like all of them to be underground for safety reasons."

North Eastern Petroleum has been operating from Wodonga for 26 years and the company has seen enormous changes in oil products distribution and usage in that time. V/Line Freight has been part of that change providing a first class delivery service for the northern regions of the State with specialised oil trains rumbling through the night. □



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Coal to in stainless

By PETER OLSEN, IAN ROBERTSON and ALAN GIBBS



Ian Robertson, BEng(Mech) (Hons), Grad I.E. Aust., CP Eng, joined Queensland Rail as an apprentice boilermaker in 1959. He completed the Certificate in Mechanical Engineering course in 1978, and the Bachelor of Engineering (Mechanical) Degree in 1984. He is currently a Graduate Member of the Institution of Engineers (Australia). Experience has been in the repair, modification, and design of rolling stock, and rolling stock contract supervision. A six-month period of work experience was spent in 1986 with Hitachi Limited in Japan on electric locomotive and electric car design. At present he is Designing Mechanical Engineer with the Manager Rolling Stock Engineering section in Queensland Rail, and is studying for a Master of Engineering and Technology Management Degree at Queensland University.



Alan Gibbs, Dip. Met. M.I.M.M.A. is Market Development Manager, BHP Steel Stainless Products. He joined the company in 1976. For three years he was a production supervisor at the Sheet and Coil Products Works at Westernport, Victoria, prior to going to Perth where he spent five years as State Metallurgist for the sheet and coil output. Following 18 months at the Tube Plant in Auckland as Works Manager he returned to Australia to take up his present position at Wollongong.



Peter Olsen BE (Hons) MEngSc MIEAust CPEng is Manager, Rolling Stock for EPT Pty Limited, a member of the ABB Group. Peter has been involved in the rolling stock industry since 1980. Prior to joining EPT in 1987, roles filled have included Senior Structural Engineer for both Comeng NSW and Union Carriage and Wagon in South Africa, with an emphasis on passenger vehicles and locomotives. With EPT, the rolling stock team which Peter leads is clearly focused on freight wagons and has been responsible for several innovative designs which are now providing real benefits to the operators. EPT's involvement with freight wagons dates from the mid 70's with more than 2000 new wagons produced in three factories. Other services to operators include refurbishment, conversions and maintenance of rolling stock.

The international competitiveness of Queensland's export coal industry has been improved by the introduction of a new class of coal wagon. The VSNB wagon was designed and manufactured by EPT Pty Ltd for Queensland Rail using 3CR12 corrosion resisting steel produced by BHP Stainless Products. The success of this project has been based on the ability of all three organisations to innovate within the framework of an open tendering process and the associated commercial realities.

Follow-up investigations after more than two years revenue service confirm that the wagons are indeed fulfilling the potential identified at the conceptual stage.

Commercial enterprises operating in today's highly competitive environment must embrace advances in technology if they wish to continue to be financially viable.

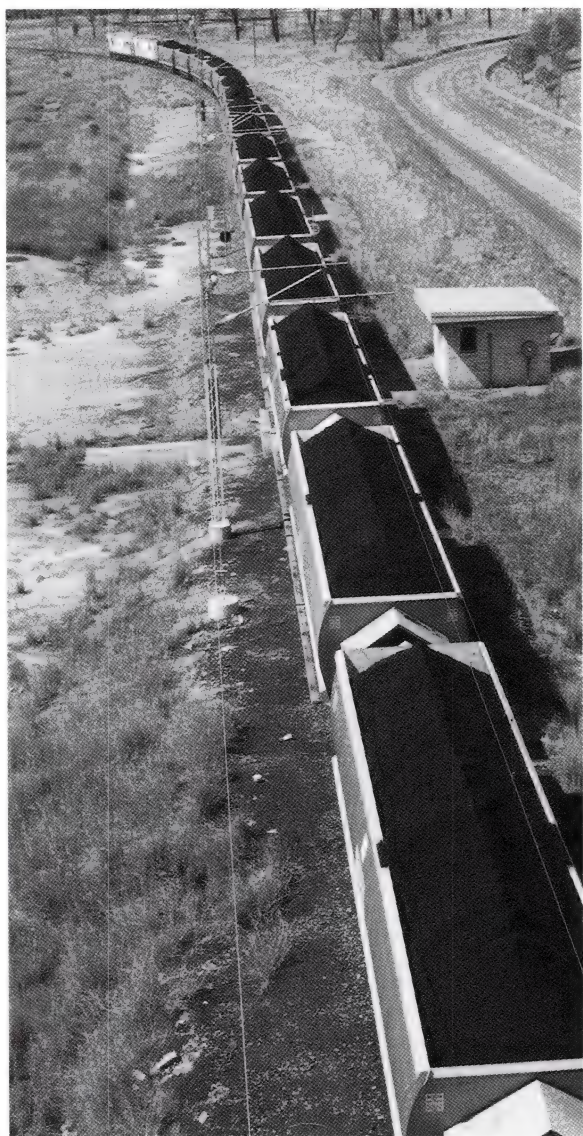
In the light of the current international market prices for minerals, transport systems have become an important factor in the cost equation which ensures profitability for their producers.

This article illustrates that proposition by presenting a case study based on Queensland Rail's acceptance in 1988 of a tender from EPT Pty Limited, which offered an alternative design for coal wagons. The design incorporated several new technical features, and was based on BHP's 3CR12 corrosion resisting steel.

The offer provided for a significant increase in payload for a less than proportional increase in tare mass. Building on the inherent characteristics of 3CR12 and the enhanced mechanical properties provided by BHP Stainless Products for this project, the EPT design offered a 90-tonne gross mass vehicle – larger than any previously used by Queensland Rail.

At a later stage of the project, the provision of five prototype pairs of semi-permanently coupled tandem wagons was added; their design offered further efficiencies by reducing tare mass, capital cost and ongoing maintenance requirements.

coast steel wagons



New-design stainless steel wagons.

Background to the venture

Queensland Rail's adoption of large coal wagons began in the 1960's with the VO class steel wagon. In 1967, construction of the first VAO aluminium wagons began. Several classes of

bottom dump and gondola types were built up until 1985.

In service, the VO class wagons required replacement of steel components in contact with coal. Structural failure has not been a notable problem. Many aluminium wagons had failed around the joints between the aluminium body and the steel end units. High train forces passed through the wagon in these areas.

At times, wagons with undetected cracks have been torn apart as fatigue cracking led to catastrophic failure. As a result, a constant program of crack monitoring and modification has been implemented.

When it was necessary for a contract for further coal wagons to be arranged in 1988, the VAZ 80-tonne gross aluminium wagon was the latest design available to Queensland Rail. An addendum was added to the contract specification for that wagon calling for design and construction of a wagon using alternative materials.

The gross mass of QR wagons has been limited by allowable axle load. The concept of 22.5 tonne axle loads became a reality, and a 90-tonne wagon was a possibility.

Based on these considerations, the configuration accepted by QR from the tenders received was a 90-tonne wagon designed and constructed by EPT from BHP Stainless' 3CR12, combined with carbon steel structural members in some areas.

Selection of 3CR12

Of the several alternative materials offered, 3CR12 was selected as the most appropriate after consideration of all factors. While a commercial premium was required compared to the carbon steel alternative, consideration of the life cycle costs gave the advantage to the 3CR12 option.

Table 1 shows the relative costs of wagon bodies (excluding bogies) and illustrates the outright commercial advantages of 3CR12 over aluminium and austenitic stainless steel. It is also noted that design costs are included in the Austen, 3CR12 and 301 price structures only. ►

TRACKS



THE WAGONS REPRESENT THE FIRST USE OF 3CR12 CORROSION-RESISTANT STEEL IN AUSTRALIAN ROLLING STOCK.

This article is based on a paper which the authors presented recently to a railway engineering conference organised by the Institution of Engineers Australia, 11 National Circuit, Barton, ACT, 2600. Telephone (06) 270 6555. Fax (06) 273 1488. The IEA holds the copyright for all papers presented at the conference.

Table 1 – Relative Costs for Coal Wagons*

Aluminium	–	1.14
3CR12	–	1.00
301	–	1.06
Austen	–	0.89

*NB – Figures exclude bogie costs

Introduced to Australia 10 years ago, 3CR12 is a low-cost lean alloy, 12 per cent chromium dual-phase ferritic, martensitic steel specifically developed to fill the gap between true austenitic stainless steels and coated mild steels. 3CR12 is suitable for general engineering and structural use, where it can economically provide high levels of abrasion and corrosion resistance in severe environments, while being relatively easy to fabricate.

While 3CR12 is not a true stainless steel and cannot replace conventional austenitic stainless steels, its particular characteristics suit applications where:

- ☐ Cost is a consideration, and aesthetic appearance is not of primary importance.
- ☐ Mild and low alloy structural steels have inadequate corrosion resistance.
- ☐ Coatings like paint and galvanising are inappropriate due to thermal, mechanical or chemical degradation.

In application, and in laboratory studies, these attributes of 3CR12 have proven it as a material that is competitive and cost-effective for the construction of coal wagons and other heavy-haul ore wagons. In overcoming problems experienced with the use of other materials in the construction of coal and ore wagons, 3CR12 has shown improved performance in the following areas:

- ☐ Increased life through superior corrosion-abrasion resistance.
- ☐ Affordable capital cost.
- ☐ Reduced maintenance costs from fatigue failure.
- ☐ Reduced maintenance costs from corrosion.
- ☐ Easier unloading through superior 'slideability'.

This contract was a practical example of 3CR12 being used in a commercially optimum design.

In addition to the unique requirements of any new wagon design, several topics are worthy of specific mention.



2



3



1

Clyde Motive Power



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6



5

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2. "C" class 2240 kW supplied to V/Line. The first locomotive in Australia fitted with isolated cab to reduce noise levels for driver comfort.

3. "BL" class 2240 kW, the first Super Series locomotive on Australian National's system.

4. SD50 supplied to Hamersley Iron. These 190 tonne locomotives have 2840 kW traction with Super Series wheel slip control and are the first General Motors domestic locomotives to operate in Australia.

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6. Clyde furnished traction motors and control cubicles for eighty 3 MW, 25 kV, AC electric locomotives for Queensland Rail. Fifty are in service on coal haulage whilst thirty are geared for high speed general freight and passenger service.

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TRACKS

THE COLLABORATION IN THE PREPARATION OF THIS ARTICLE EXEMPLIFIES THE CO-OPERATION BETWEEN GOVERNMENT AND AUSTRALIAN INDUSTRY IN THE DESIGN, CONSTRUCTION AND EFFECTIVE USE OF 90-TONNE STAINLESS STEEL WAGONS TO HAUL COAL TO THE COAST IN QUEENSLAND.

THE LAST OF 242 WAGONS IN THE INITIAL CONTRACT WAS COMPLETED TWO YEARS AGO.

SINCE THEN THERE HAS BEEN AN EVALUATION OF THEIR SUCCESS AND THEIR REAL CONTRIBUTION TO THE EXPORT COAL TRADE SO VITAL TO THE AUSTRALIAN ECONOMY.

This was the first use of 3CR12 as prime structural material in an Australian rolling stock application. With the severity of the structural environment in which rolling stock operates (particularly heavy haul mineral operations) 3CR12 is now fulfilling its potential.

As an essential element of design optimisation, BHP Stainless Products guaranteed a 0.2 per cent proof stress level of 340 MPa for this project, an increase of over 20 per cent compared to material for general supply – a significant new development.

When introduced they were (and still are) the heaviest freight wagons in Queensland.

A side benefit of QR's electrification program was the upgrading of track structure to accept higher axle loads on the Goonyella system. This provided the ideal opportunity to increase system capacity and efficiency by using heavier wagons.



These efficiencies, are derived from improved pay load/tare ratios, and include increased haulage capacity of maximum length unit train, reduced operating costs via locomotive utilisation, fewer bogies, brakes and couplers resulting in lower spares, inventory and maintenance and lower capital cost.

Perhaps most importantly there is improved unloading throughput, directly increasing the entire transport system capacity, and Australia's international competitiveness.

One measure of this improved efficiency is increased train density. This refers to payload per unit length of train. As one of the governing criteria for train capacity is the length of the passing loop on the system, improvements in train density are particularly valuable in enhancing transport system efficiency.

The VSNB wagon carries 4.45 tonnes per metre which represents a seven per cent improvement on the best previous design.

☐ *Reduced coal hang-up*

A perennial inefficiency and topic of dispute is coal hang-up resulting in wasted capacity. 3CR12's excellent discharge characteristics (designated as 'slideability'), together with careful attention to door installations on the production line, contribute to a smoother unloading process and consequent improved unloading efficiency.

Discharge aperture geometry was carefully considered at detail stage and performance has verified that the centre still has not detracted from discharge rates or created hangup.

A follow-up inspection on the first wagon after over two years of service revealed excellent performance, with a record of minimum maintenance requirements and superior door performance.

☐ *Improved structural geometry*

To ensure structural integrity the design included a longitudinal central member (centre sill) in conjunction with light side sills and cant rail. When compared to previous designs which had exhibited fatigue problems, it was expected



that a centre sill would provide a more direct and less troublesome load path.

As the Chief Mechanical Engineer's Branch of Queensland Railways had installed finite element analysis software and workstations for the structural analysis of coal wagons, it was decided that a QR analysis of the wagon structure would be conducted in parallel with EPT's analysis.

The initial design was refined using this method.

Full scale strain gauge testing on the prototype confirmed a most significant reduction in the stress levels of typical problem areas.

☐ Development and verification of welding procedures

To implement a 3CR12 design, a significant development in welding procedures was required. The use of submerged arc welding (SAW) was a preferred option from the points of view of fabrication economy and consistent weld geometry. However, no data was available from previous usage of SAW in this area. As SAW is viewed as a high-heat input process, concerns were raised about its suitability.

SAW in the lower-heat ranges had previously been used successfully for coal wagon construction with austenitic stainless steels. For this reason, the decision was taken to investigate the suitability of this process in depth.

EPT's research utilised the resources of the University of New South Wales and was monitored by BHP Stainless Products at theory and laboratory level and by QR at production level.

The test program was designed to identify and verify appropriate procedures and included routine testing in accordance with AS1554, more rigorous metallographic inspection, accelerated fatigue testing and fractographic examination of the preferred processes.

The results of this investigation demonstrated both the suitability of SAW for the application and the superior performance of SAW when compared with the performance of manual metal arc welding, which was required in certain areas of the wagon construction. In addition, the

investigation confirmed the suitability of the MIG procedure chosen.

This work has led to EPT lodging a patent application for what is believed to be a world first – the application of SAW to 3CR12 for use in a dynamic structural environment.

☐ Tandem pairs

The last 10 wagons were constructed in semi-permanently coupled pairs of wagons sharing brake equipment. This technique provides further reductions in tare mass and capital cost.

These wagons are QR's first experience with tandem pairs. To date, performance has been exemplary and the concept has been extended to other types of wagons and is intended for much broader future use.

Conclusion

This case study clearly illustrates the benefits that can be realised through private and public sector co-operation in utilising innovative design.

These innovations have included developments in materials and production technologies and the judicious upgrading and modification to railway system infrastructure and governing operational criteria.

The net result is greater utilisation and efficiency of the central Queensland coal transport system, thereby increasing Australia's international competitiveness. ☐

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Flying dust set in

A FEW KEGS OF WELL-EARNED BEER AT CRYSTAL BROOK AWAITED THE RE-SLEEPER GANG WHICH INSERTED 10,003 CONCRETE SLEEPERS IN 24 HOURS TO SET A NEW WORLD RECORD.

Amid flying dust and nagging wind, history has been made on a section of standard gauge track between Coonamia and Crystal Brook. Lumbering across flat grain country in South Australia's mid north, under a milky summer sky washed out by dust haze, the SMD80-AN and its work-hardened crew inserted 10,003 concrete sleepers in 24 hours to set a new world record.

At midnight on Tuesday 10 December, the 104-strong crew which assembled for the record bid worked in two shifts, night and day.

A world first in high-speed weighing

Evans Deakin Industries is in the process of integrating into New Zealand's rail network an innovative, Automatic Vehicle Identification (AVI) and Coupled in-Motion Weighing (CIMW) system. Once installed this system will have the capability of freight car container identification and weighing at speeds of up to 10 km per hour.

When fully operational New Zealand Rail Limited will be entitled to claim access for front-line technology and a genuine world first for such a comprehensive system. To provide service and equipment to the demanding standard required Evans Deakin has joined forces with acknowledged world leaders in rail-related technology.

Equipment for the weighbridge including electronics and software is being supplied by Chronos Richardson, and the automatic vehicle identification system is made by Eureka Identification System. Both are British companies.

The system comprises 19 installation at 17 sites located throughout the New Zealand rail system in both north and south islands. The information-gathering at each installation varies from an individual AVI system on single track to combination AVI/In-Motion weighing on double track.

The system incorporates Weighline transducers which are mounted on sections of rail installed in the track. The weighline system does not require foundations and weighbridge pit. The output from the Weighline transducers is processed by the weight

processing unit. AVI antennas are mounted each side of the track and are connected to a decoder unit which processes the data from the active tag which is mounted on each item of rolling stock.

A number of wheel sensors is installed on the track at specific locations in order to determine the presence of rolling stock and the type of wagon namely two-axle or 4-axle. The data from the weight processor, the AVI decoder and the wheel sensors is processed by an IBM PS/2 computer trackside into a train message which is transmitted to the NZRL computer in Wellington.

In addition to gathering basic information, the system is capable of providing such additional information as wagon overload, wagon out-of-balance plus associating individual containers within the NZR container fleet with the respective carrying wagon. Accuracies claimed for the system include in-motion weighing as low as ± 5 per cent for individual freight cars at speeds up to 40 km/h to one error per ten thousand reads (0.0001) for the AVI system.

The system is designed to collect and parcel information from the train and then to transmit it to data management files and from there to the host main line computer system. In its current configuration the system can be expanded to detect and provide information on hot box, acoustic bearing, dragging equipment and wheel impact. Additional information can be obtained by contacting Mr Tom Greenwood (07) 840 2258. □

and a record concrete

*Manager of concrete re-sleeping,
Dick Dickison, supervised the
successful world record attempt.*



By noon they had inserted 5,117 concrete sleepers in the 15km section of track and around 5pm smashed the previous record of nearly 8,000 sleepers laid in a single day established by Burlington Northern in the United States.

With pallets of concrete sleepers stacked along the 15km section beginning a few kilometres south of Coonamia and stretching all the way to Crystal Brook, the crew worked feverishly to shift 2,900 tonnes of concrete sleepers in 24 hours.

With the SMD80-AN labouring to keep up with the dog pullers out in front and the rail-locating and clipping teams coming up behind, the crew shifted 4,900 tonnes of sleepers over 48 hours, forging on after the record was broken to insert a total 17,000 concrete sleepers in the Port Pirie to Broken Hill line.

Two observers were present to witness the record bid, which was submitted to the *Guinness Book of Records*.

"The double track running between Port Pirie and Crystal Brook made it an ideal location at which to

try for the record bid," rail transport projects manager John Furness said. "We had track access for the full 48 hours with only minimal disruption to traffic.

"The extra manpower gave the crews the capacity to work faster than the SMD80-AN and we had fitters on standby to service the machine whenever necessary."

A few kegs of well-earned beer awaited the thirsty crew in Crystal Brook at the end of the record-breaking two-day effort.

For manager (concrete sleeping) Dick Dickison, the record success is a tribute to the dedication of his men, who work in trying conditions to keep the AN system running smoothly. Dick knows this back-breaking work backwards — he inserted the first concrete sleeper on the Trans Australia Railway between Port Augusta and Port Pirie back in 1973.

"In those days we had 60-man gangs supported by smaller machinery and we could lay between 800 and



TRACKS



In the heat and dust of South Australia's mid-north, the SMD80-AN crew battle to break the re-sleeper record. A television cameraman filmed the record bid.

1,000 sleepers a day," he said. "We've got a strong, dedicated team working with the SMD80-AN and this record-breaking achievement confirms what we've thought all along — they are the best concrete resleeper gang in the world."

AN's 20-year concrete resleeper program to upgrade the entire gauge mainline network is in the final leg of a long haul — on target and set for completion by 1995.

Nearly 223,000 concrete sleepers were inserted by the \$2.3 million SMD80-AN concrete resleeper machine and its 40-man crew in 1990/91. More than 111,000 concrete sleepers were inserted in track between Ooldea and Fisher on the Trans Australia Railway and 111,950 inserted in the Broken Hill Line.

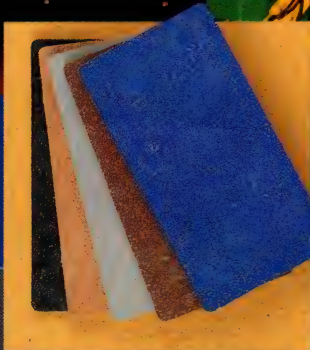
The resleeper target for 1990/91 was achieved four weeks ahead of schedule, bringing to 86 per cent the proportion of standard gauge mainline track which has now been resleepered.

The ultimate goal is the insertion of 4.8 million concrete sleepers in the standard gauge mainline by the mid-90s. Around 560,000 sleepers are required to complete the program. □

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REMEMBER THE SHOOT-OUT AT RIVERTON SA?

Chris Hackett of *The Advertiser*, an Adelaide newspaper has reminded the State Transport Authority that it is about to sell a piece of history – the site of South Australia's only political assassination.

The STA has called tenders for the sale of Riverton railway station building, 53 kilometres north of Gawler.

It was at Riverton Station in March 1921 where Mr Percy Brookfield, a New South Wales State politician, met his end when he was shot by Russian immigrant, Tomayeff.

According to the newspaper report, Mr Brookfield, then the Member for Barrier, was one of five train passengers who faced a hail of forty shots. Somehow, three of the passengers survived.

The Advertiser, of 23 March, 1921 reported that Tomayeff started shooting at a crowd at the station, prompting Mr Brookfield to grab a revolver from a policeman and fire two shots.

These missed Tomayeff who shot the MP before being overpowered by a bystander. He never stood trial and died in a mental asylum in 1948.

WORLD RAIL TRACK CONFERENCE

Rail Track Association Australia is joining with Railways of Western Australia to host the ninth International Rail Track conference at the Hyatt Regency, Perth, from 25-29 October 1992.

The Association has published more than 200 papers on all aspects of track engineering since its formation nearly 20 years ago.

The theme for this year's conference is *Permanent Ways and Effective Means*.

Enquiries to the IRTC Conference Manager, c/- Pandrol Australia Pty Limited, PO Box 8, Seven Hills, NSW 2147. Telephone (02) 671 6555. Fax (02) 671 7875.



Road and rail-side views of Riverton railway station.

ALL CHANGE FOR A GAME OF GOLF IN ADELAIDE

Players and spectators at the Royal Adelaide Golf Course recently enjoyed the ultimate in transport convenience during one of the world's biggest golf team events, the Ashai Glass Four Tours World Championship.

Trains on the Grange line, which runs through the course, stopped at a temporary station on the links for the first time in more than thirty years.

It is said that the facility's re-opening has made the Royal Adelaide the only course in the world where a railway station is located adjacent to the clubhouse, the first tee and the 18th hole.

The original Links Station was opened on 30 June 1906 but closed a few years later due to lack of patronage.

As a finishing touch tournament organisers decorated the Links Station with petunias and palm trees.

Some 1,000 boardings and alightings were counted during the five-day event and a Field Supervisor was in attendance at the temporary station to ensure that all went smoothly.

RESPONSE TO COMMISSION'S REPORT DUE

The Industry Commission estimated that an efficient rail system for Australia would result in net benefits to the whole economy of about \$5 billion annually in the long term.

This represents a \$300 increase in income for every Australian regardless of whether they use railways, according to Federal Land Transport Minister, Bob Brown.

A working group comprising State and Territory government officials is considering recommendations in the Commission's *Report on Rail Transport* and is due to report to the Australian Transport Advisory Council meeting during April.

Responsibility for action on many of the Commission's recommendations rests with the State and Territory governments. The Australian Government regards a world-class rail system as vital if the nation is to improve the competitiveness of its exports.

WESTINGHOUSE'S STANDARDS ACCREDITATION

Railway signalling manufacturer, Westinghouse Brake and Signal Company (Australia) Limited, at Spotswood, Victoria, has achieved accreditation to the International Quality Standard ISO9001/AS3901.

In a recent ceremony to mark the occasion Lloyd's Register representative, Tim Keane, presented the compliance certificate to Reg Walls, Westinghouse's Operations Manager.

"The award of this certificate marks the culmination of more than 18 months' work by employees at all levels within the Spotswood plant", said Mr Walls. "Every aspect of our business on this site has been carefully analysed and documented ensuring consistent attention to quality from initial sales enquiry through to delivery and of course after-sales service"

The Signal Division of Westinghouse Brake and Signal Company has been manufacturing in Spotswood for nearly 110 years and is the largest manufacturer of railway signalling equipment in Australia.

The Division has consistently exported a large proportion of sales



Mr Timothy Keane (left), Lloyd's registered assessor, presents the ISO/AS3901 accreditation certificate to Mr Reg Walls Operations Manager, Westinghouse Brake and Signal Company (Australia) Limited.

during the past decade and has invested heavily in research and development to support its ongoing export activity.

The Division is currently implementing a \$75 million project in Thailand providing a significant upgrade to the railway signalling system between Bangkok and Lop Buri, a distance of some 140 kilometres.

The company says the Quality Assurance system has had a most

beneficial impact on the manufacture of equipment for the Thailand contract and is considered essential to support the further promotion of export activity throughout South East Asia.

Westinghouse employs about 120 people at Spotswood. The IQS/AS Standard certification is valid for three years and is subject to interim surveillance and assessment by Lloyd's.

ACL Comcork floors Japanese-made light railers

ACL Comcork a Melbourne manufacturer of heavy-duty commercial flooring, has cracked the Japanese market by winning a contract with a major Japanese company, Kawasaki Heavy Industries, against international competition.

The contract is for supply of Comcork's Walk Easy Anti-Slip Heavy Duty Safety Flooring which will be used in 30 light rail vehicles Kawasaki Heavy Industries is building for the Tuen Mun (Hong Kong) Light Rail System, operated by the Kowloon Canton Railway Corporation (KCRC).

"The assistance of Mr Tony Hogg, the Senior Trade Commissioner at the Austrade office in Osaka was a great help to us in obtaining this contract," ACL Comcork Sales Manager, Mr John Millard, said.

Kawasaki Heavy Industries is one of Japan's major manufacturers, engaged

in ship, industrial machinery, engine, aircraft, rolling stock and industrial plant manufacture.

Comcork's submission was aided by supply of flooring five years ago for 70 Light Rail Vehicles manufactured by an Australian company, Comeng, for phase one of the Tuen Mun Light Rail System.

"Our cork based flooring is performing very well after five years of very hard traffic conditions and this obviously helped our case with Kawasaki who were asked to evaluate our product for the new light rail vehicle order", Mr Millard said.

Comcork has extensive installations of Walk Easy flooring in many applications throughout Australia.

"Walk Easy has also gained wide acceptance in overseas markets. Another major installation in Hong Kong is at the Police Academy where

Walk Easy is installed on an inside running track. Comcork flooring is used extensively in luxury craft being manufactured in Australia for south-east Asian customers, among others", he added.

Mr Millard said ACL Comcork, an Automotive Components Limited subsidiary with over half a century of experience in cork and rubber product manufacture, has recently received authorisation as a Quality Assured Manufacturer.

The cork used in Comcork Walk Easy when combined with rubber and PVC, imparts characteristics such as slip resistance, sound absorption, excellent recovery rate from heavy loads, comfort, good thermal features, fire resistance and low toxicity. Anti-degradents are also added to protect the material from environmental hazards. □



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RETIRED AFTER FIVE MILLION KILOMETRES

After 60 years' service covering five million kilometres around the Sydney metropolitan system the old red passenger carriage number 3426 has been retired formally marking the end for its class.

It was this same car draped with flags and bunting which led the first electric train across the newly-opened Sydney Harbour Bridge on 19 March 1932.

Among passengers on the last run for 3426 was John Lock of Peakhurst, son of Charles Alfred Lock a senior driver on the London-Brighton South East Railway who was brought to Australia in the 1920's to instruct steam train drivers in handling electric locomotives.

Mr Lock senior was the driver of the inaugurating service over the bridge in 1932.

Also on board 3426 was former railway architect David Cooke whose father Max Cooke was train controller on the first electrified bridge crossing.



With the famous 3426 car (from left) State Rail chief executive, Ross Sayers, Transport Minister, Bruce Baird, Milsons Point station master Garry Spencer, driver Lennie Gaunt, and CityRail group general manager Rob Schwarzer.

NEW WAGONS TO ROLL SOON

Delivery of 350 new coal wagons for Freight Rail to operate in the Newcastle and Hunter Valley coal fields will commence this year. More than \$60 million will be invested in the wagons which will incorporate the latest in railway technology.

Last financial year, Freight Rail hauled 40 million tonnes of coal, up 12 per cent on the previous financial year.

A feature of the new design is the use of permanent couplings, which will result in the wagons operating in seven wagon 'rakes'. The new coupling design has an important environmental benefit, reducing noise levels associated with train operations. It will also reduce the maintenance costs for the wagons and further improve efficiency of Freight Rail's coal operations.

Ninety-five tonnes of coal will be moved in each wagon, nearly 20 tonnes more than the current capacity of coal wagons.

The new wagons will also trial an automatic unloading system.



The \$1 million Plasser track stabiliser.

CITYRAIL'S NEW DYNAMIC TRACK STABILISER

Two new Dynamic Track Stabilisers, the first of their kind in Australia and costing \$1 million each, have been bought by CityRail.

Three more of the Plasser machines are to be bought for Freight Rail. The machines are vital in improving track quality and settlement without the need

to impose train speed restrictions and timetable alterations.

Each 60-tonne machine simulates the same settling effect as 80,000 tonnes of freight hauled over the track. One machine can treat between 500 and 1700 metres of track an hour.

Powered by a 345 hp GM diesel engine the stabilisers can travel at up to 80 km/h between work sites.

Rotating weights in gear boxes transmit vibration to the firmly-gripped rails. The track and surrounding ballast are vibrated at a frequency which best settles the ballast into a minimum volume.

PORTABLE WARNING SIREN

More than 400 new portable warning sirens are being distributed to track and maintenance workers throughout New South Wales.

The Stentor hand-held electronic siren is the brain-child of power electronics specialist Zenon Golena, who was asked by StateRail to design a replacement for the old banned gas-powered airhorns in August 1990.

The airhorns were banned because they contained CFC's.

The Stentor is a big improvement on the old models, thanks to Zenon's planning and design.

The unit weighs only 1.3 kgs, compared with 10 kgs for its predecessor.

It has a two-volume setting, and the rear sound level is controlled to protect the operator's ears.

NEW BRAKING FOR WA GRAIN TRAINS

The vacuum braking system on most of the Westrail grain wagon fleet is to be replaced with air braking systems allowing locomotives to haul up to 55 laden wagons instead of 40 as at present.

Westrail is completing its third biggest grain haul on record with only 21 trains – nine less than in 1989 – and 816 wagons a considerable reduction on the 3000 wagons of only a decade ago.

Such new efficiencies have ensured a reliable fast service during the harvest season.

Of 16 P-class locomotives purchased by Westrail nine will be used on the grain haul service in the future. Westrail is in the third year of a five-year agreement on grain haulage signed with Co-operative Bulk Handling, marketing authorities, and grower representatives.

MOST POWERFUL LOCOMOTIVES

The most powerful locomotives destined for commercial service in New South Wales, 4000 horsepower engines each with the haulage capacity of 100 semi-trailer road transports, are about to be ordered for the State Rail Authority.

State Transport Minister, Bruce Baird, says negotiations are underway for construction of the locomotives with the first-ranked tenderer Clyde/EMD/Citibank.

The other two tenders on the short-list for the work are GE/Goninans/Allico Leasing, and Morrison Knudson/Goldman Sachs.

It is expected the first of the new locomotives will be in service by mid 1993. Under the contract Freight Rail will gain the equivalent of 84 new diesel-electric locomotives, 29 of which will be 4000 h.p.

The remaining locomotives will be rated at 3000 horsepower.

OVERSEAS DEMAND FOR SCALE MODELS



An A-class locomotive (left) and two N-class locomotives completed in V/Line livery.

Model Australian locomotives to a precise 1:87 scale made to the original engine manufacturer's detailed working drawings are finding an increasing market with overseas collectors.

The locomotives are produced in limited numbers, usually 150 to 200, and each one is registered in the owner's name with its own serial number.

No detail is omitted right down to the original manufacturer's nameplate.

Bogie assembly is intricate and duplicates in miniature the real locomotive itself. There is power to all wheels which gives the model an amazing capacity to reproduce the performance characteristics of the full-scale engine.

PSM locomotives already are being exported to Japan, the USA, Hong Kong and Switzerland. These markets are noted for their precision engineering skills and appreciation of precision engineering in scale models.

Precision Scale Models, a division of P.S.M. Developments (Aust.) Pty Ltd, which provides much of the know-how and sets the quality standards finds it difficult to keep up with demand for some of its models all of which are finely-crafted from brass.

The company is among world leaders in the production of precision scale locomotive models and is rapidly gaining an international reputation for the quality of its products.

PSM goes to great lengths to obtain correct information based on the manufacturing company's working drawings for the original locomotive, and from rail operators. Up to 200 photographs might be taken of each full-scale locomotive to illustrate in detail every aspect of the design.

The builders then produce exact HO 1:87 scale working drawings from which the models are prepared.

Measurements taken on a real locomotive have been found to vary slightly from the manufacturer's working drawings because changes have been made in the factory during production. PSM to date has completed models for Victorian T, A, B, H, and N class locomotives.

Enquiries: Precision Scale Models, PO Box 134, Wantirna South 3152, Victoria, Australia.

CLYDE HITS CENTURY

State Rail major contractor Clyde Engineering, Bathurst, recently rolled its 100th locomotive in nine years off the line.

The 81 Class engine 8184 was fired up and driven out of the loco shop to mark the occasion.

During the nine years that followed, Clyde at Bathurst built a total of 84 81-Class locomotives for the NSW State Rail Authority, 15 DL-Class locomotives for a private railway operator, Goldsworthy Mining of Western Australia.

Each of these classes was designed in Australia by Clyde Engineering to suit Australian conditions and equipped with the very latest General Motors power plants.

To mark this fine achievement, the 100th locomotive (8184) returned to Clyde Bathurst for a brief celebration at the Kelso plant.

Clyde Bathurst has also recently been granted registration as a quality Endorsed Company by Standards Australia, which will see them better placed than ever before for building their next 100 locomotives and winning Government contracts.

Currently Clyde has 108 employees, engaged in contracts for the NSW State Rail authority and Queensland Rail. The plant has a solid workload for the next two years.

Manager, Mr John H. Davison said: "We have been rewarded with good suppliers and people who have been very loyal to us. At Clyde Bathurst we have always had a culture of teamwork, and we've worked together to come up with a good result."

Mr Davison expressed his sincere thanks to the Clyde employees in working to produce the 100 locos.

BRISBANE'S INNER-CITY TUNNEL

Construction work commenced early in March on a \$23 million project to duplicate Brisbane's inner-city rail tunnels between Central Station and Roma Street.



Clyde's 100th locomotive.

More than 130,000 tonnes of rock will be excavated in the 32-month project to form the two single-track tunnels, each of 726 metres in length.

The tunnelling project is the first stage of a massive \$135 million program to provide a four-track inner-city network between Bowen Hills and Roma Street stations. This program includes the construction of additional tunnels, associated trackwork, signalling and wiring and major station upgrades at Roma Street, Central and Bowen Hills.

The current capacity of the inner-city section is limited to 25 services per hour which will constrain the future expansion of urban services and the introduction of new services between Brisbane and the Gold Coast in 1995.

The new tunnels will dramatically increase the capacity to 45 trains hourly in each direction.

The \$23 million tunnel project between Brunswick Street and Central Station is being carried out by Concrete Constructions, one of the companies which worked on the Sydney Harbour Tunnel Project.

The drilling machine which will perform 85 per cent of the excavation work on the Brisbane tunnels is a 50-tonne Mitsui Miike S200 Roadheader. This machine bored the land tunnels for the Sydney Harbour project and has the capacity to excavate 10 cubic metres an hour.

Constructing the two tunnels below Brisbane's central business district has demanded the highest levels of

engineering expertise. While it is one of the largest rail tunnel projects undertaken in Australia, it is also one of the most challenging from an engineering perspective.

The design has to accommodate low overburden cover between tunnels and buildings, and incorporates the latest technology to reduce noise and vibration.

This includes the installation of sound-absorbent acoustic pods along the entire tunnel length together with neoprene insulation to isolate the track from the track bed to reduce vibration.

FIVE NEW ROAD-RAIL VEHICLES

Five new road-rail vehicles have been bought by CityRail for \$1.9 million and will be used for building and maintaining electrification systems in New South Wales.

The vehicles were made by RFW of South Granville and are Australian-designed with 90 per cent Australian-made components.

Clayco of Taren Point made the lifting units and fitted out the truck. Each is powered by a Cummins diesel engine working through an Allison gearbox.

NEW PRODUCTS & PROCESSES

Information and photographs about new products and services available from Australian companies serving the rail transport industry, particularly those relating to new technological developments, should be forwarded to the Editor, Network, GPO Box 2501V, Melbourne 3001.



An emergency patch is applied to a tanker.

Metal patch for tanker emergencies

A new Australian-invented product from Environmental Emergency Seals Pty Ltd of Sydney can provide quick emergency repairs for fuel tankers involved in accidents.

A metal patch over punctures or leaking seams can be placed in position using a series of magnets or, in the case of aluminium tankers, rubber suction cups.

The patch stops the loss of fuel or oil thus minimising environmental damage and expensive cleanups. In a smaller version using rare earth magnets which can resist higher



The three-tonne model easily handles paper rolls for rail transport.

pressure there is a patch which can be used on large distillate storage tanks or on pipelines under pressure.

Freight Rail in New South Wales has purchased quantities of the patches for rail emergency vehicles throughout the State.

The simple, but effective invention which could be a world-first for Australia is the work of Grahame Goulding of EES Pty Ltd.

Hyster's three- tonne model

Hyster Australia Pty Ltd has produced a three-tonne power-packed lift truck that is specially designed and built for difficult and intensive applications.

Called the H.3.00XLX, Hyster says it out performs the standard factory three-tonne lift truck and comes into demand when trucks are pushed to their very limits. It has a high torque engine for rugged performance, accelerates well and gives fast response when fully loaded.

Enquiries: Hyster Australia Pty Ltd, Telephone (02) 772 3277.

Parker Hannifin plans huge hose output

From its 5,500 square metre factory at Wodonga opened last year, Parker Hannifin, one of the world's leading manufacturers of hydraulic and other hoses plans a production output worth more than \$30 million a year.

Parker Hannifin, Australia's only producer of rubber hydraulic hose, has said it is installing new test equipment at Wodonga to upgrade product and procedures to meet Australian Standard AS3901. There will also be extensions to present product lines, which include rubber hydraulic hose produced to specifications 100R1, DIN 20022 ISN, 100R2, DIN 20022 2SN, as well as steam hoses.

Enquiries: Mr Brian Watts, Parker Hannifin Australia Pty Ltd, 9 Carrington Road, Castle Hill 2154. Telephone (02) 634 7777. Fax (02) 680 4445.

NEW PRODUCTS & PROCESSES

Remote-controlled loading arms

A leading manufacturer of rail tanker loading systems for the petroleum and chemical industries, Emco Wheaton, is pioneering the development of a new generation of loading arms to deal with the transfer of hazardous fluids.

Most tanks for rail in many parts of the world are filled through an open manhole with only liquid gas and very dangerous chemicals using closed filling systems.

Emco Wheaton has been developing some low-cost, but effective solutions to problems connected with open-manhole loading of alkalis, acids and other dangerous fluids used by the chemical industry.

It has devised a remote-controlled loading arm that can be lowered into the open manhole of a tanker by an operator standing many metres away.

This loading system joins the recently released Emco Parallel Arm loader which operates like a single arm even though it is made up of two boom loaders connected together. One arm is for product while the other is for vapour.

Enquiries: Mr D. Dawson, Emco Wheaton Australia. Telephone (03) 486 2333.

Inspect-A-Cam wins award

The Inspect-A-Cam, developed by CityRail's Illawarra Regional Engineering employees won the Institution of Engineers, Australia Engineering Excellence Award for New Products, and the 1991 Ken Erickson Achievement Award of the Permanent Way Institution of NSW.

The Inspect-A-Cam is a portable video periscope, designed to allow close-up inspection of steel overhead wiring structure condition.

Total cost of research and production of the Inspect-A Cam



A remote-controlled loading arm for open loading systems.

prototype was \$10,000 and took 10 weeks.

The portable device can be carried and operated by one person.

It can reach sites up to 10 metres above the ground, and can be used around existing live 1500-volt power lines.

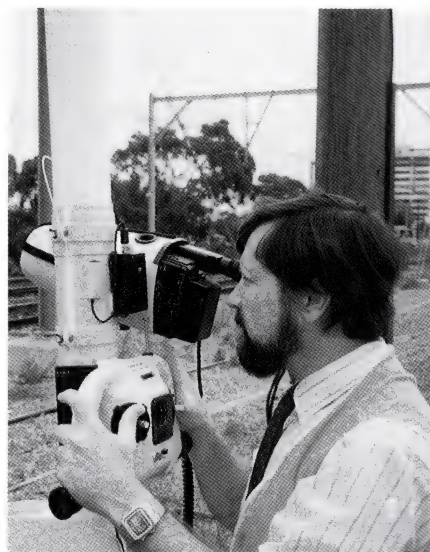
A permanent video record can be made of the inspection which can later be edited to provide an accurate data base, and/or training information for staff inspecting and finding defects.

The award has delighted Inspect-A-Cam developers, regional engineering manager Mike Hickey, regional civil engineer Barry Hedley and slips and floods manager, Peter Hilleard.

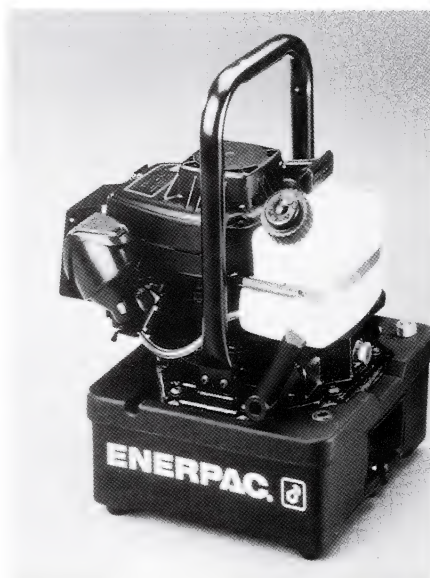
New pump provides hydraulic power

A petrol-powered portable pump which permits users to operate hydraulic tools on track-side rolling stock maintenance is being introduced by Enerpac.

The new two-horsepower pump, available in two models with two or four-litre reservoirs, brings the power, precision and speed of hydraulics to applications where



Peter Hilleard at the controls of Inspect-A-Cam



The new go-anywhere pump for hydraulic power.

these benefits were previously unavailable.

Enerpac's go-anywhere pump features two-speed operation for speedy actuation of tool cylinders in such applications as fabrication, lifting, maintenance and rescue.

Features include:

- ☐ Externally adjustable relief valve for convenient pressure reduction
- ☐ Three-way, two-position valve
- ☐ Operation entirely independent of auxiliary power sources such as electrical supplies or battery rechargers.

Enquiries: Roy Coulson, Enerpac Division, Applied Power Australia, 29 O'Riordan Street, Alexandria 2017. Telephone (02) 698 9955. Fax (02) 698 9664.

REVIEWS

Suburban Tickets of the Victorian Railways

By Keith Atkinson

ARHS sales, Melbourne. \$39.95

Suburban tickets

To professional railwaymen, tickets are simply a means of implementing a revenue collection program. Their design and shape will vary from railway to railway, and from time to time. Because of this, they attract the interest of collectors throughout the world — albeit that their numbers are notably smaller than those whose hobby is philately.

Keith Atkinson of Melbourne is one such collector, and the results of his work are currently being published in a series of histories of ticket issuing practices.

The most recent is *Suburban Tickets of the Victorian Railways*, a title which is self-explanatory. In a 351-page volume, with 80 full-colour pages of tickets, Mr Atkinson records the revenue collection practices of Victoria's suburban railways from their very earliest days, and in doing so, provides an interesting commentary on our social life and its needs.

"Suburban" railways were not confined to Melbourne — they operated in such diverse parts of Victoria as Ballarat, Mildura, Geelong, Warrnambool and Ararat.

Just to look at the illustration of the ticket tempts one to read the text. Not only have some services disappeared entirely, but many stations have been renamed. Where are they? And what

was the steamship "Queen"? What was a Periodical Pass? And if one examines a monthly ticket for the Victorian Railways' St. Kilda and Brighton electric tramway issued in 1936, is it so very different from those currently used on Melbourne's Met services?

The text describes the tickets and their purposes. It gives an historical account of printing arrangements. There are some selected black and white illustrations — not new photographs in most cases, but very well reproduced — to give an idea of the vehicles on which the Victorian tickets were available.

The cover itself is eye-catching and similar in design to those of a series of books also being published by Mr Atkinson.

This book is not for those who regard transport tickets as just a piece of paper or card. But for those who have even a passing interest in the way in which those tickets are issued, and accounted for — or for those who seek to find an unusual comment on our social mores, this volume and its companions (which deal with, inter alia, Tasmania and Western Australia) will be thoroughly enjoyed.

Suburban Tickets of the Victorian Railways ISBN 0-9598718-53 is available through ARHS Sales, PO Box 5177AA, Melbourne 3001, Victoria. RRP \$39.95 plus postage.

Rail Scene Victoria

By John Sargent

Train Hobby Publications, Melbourne. \$35

From nameplates to bogies

For the rail enthusiast this book is somewhat different from ordinary expectations because it features modern locomotives and rolling stock in the latest livery as well as recent celebratory steam locomotive journeys revisited.

It is different, too, because the illustrations are not only of locomotives and rolling stock. There is a liberal

selection of close-up photographs of such components as a big end crank, engine nameplates and wheelsets, manufacturers' nameplates and even engine numbers.

Locomotives tend to dominate the pictorial content, however, and there are many excellent illustrations which recapture recent events of significance such as the visit of the InterCity XPT to

Melbourne, the Flying Scotsman's tour, and the Bicentennial train.

The book is divided into five sections — At the Depot, Spencer Street Station, On the Main Lines, In Steam Again, and Preserved Railways. Each section has its own introductory text which is descriptive and informative and allows the author some comment.

REVIEWS

He mourns the loss of 'much of the absolutely delightful VR railway architecture' and specifically mentions the main line signal box that used to be at Mangalore, and stations which have fallen into disuse or been downgraded such as Seymour and Bendigo.

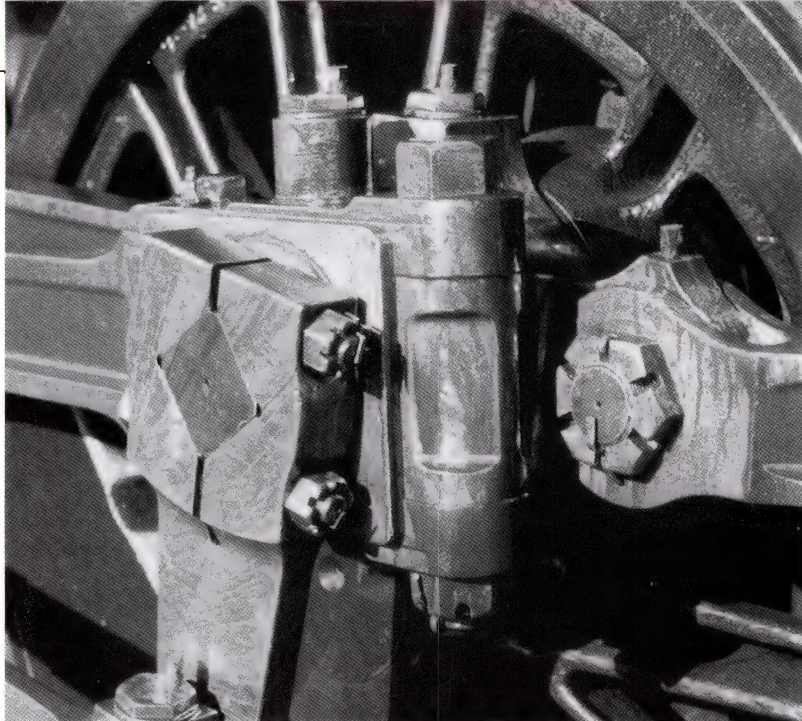
John Sargent is a former teacher of mathematics, science and English and right from when his early boyhood days were spent watching and riding trains has maintained a strong interest in railways.

"I can still remember the occasion of my being hauled bodily by the head prefect, from under the valance of S302 one cold winter evening at Albury station; I was supposed to be at school in bed," he says in the book's Foreword.

There is not much in the way of anecdotal text in this book as its primary objective is to provide the photographic illustrations which jog the reader's memory, provide an historical record, and allow the reader to relate to train journeys past and present.

Rail Scene Victoria obviously has its widest appeal to train travellers resident in that State, but the author believes there is considerable potential interest among rail enthusiasts from all parts of Australia and overseas –and not all from expatriate Victorians.

Rail Scene Victoria ISBN 0 646 03259 3, 64 pp, published 1991. Printed in full colour by Highway Press, Knoxfield, Victoria. From Train Hobby Publications, PO Box 134, Wantirna South 3152. Telephone (03) 801 1889. Fax (03) 801 5225. □



The big end crank detail on the J515 steam engine.

Sydney fares switch to auto

Step into the future with CityRail automatic fare collection. It is part of the plan to give Sydney a world-class rail system by 1995. To help achieve this goal, CityRail is developing an automatic fare collection (AFC) system which incorporates computerised ticket issuing and ticket checking machines.

Machines will be installed at 263 stations in the CityRail area and 29 major stations will be fitted with electronic gates. It is proposed to introduce on-train ticket sales in some of the outer regions of the City Rail area, Newcastle, Nowra and Southern Highlands.

The AFC system is the first fully automated ticket issuing and checking system of its kind in Australia.

Smorgon Cubic Pty Limited hold the contract to supply and install all AFC machines. The company has installed systems in London Underground and in Washington and Hong Kong.

CityRail's own AFC project team has utilised design from other overseas systems to develop a customised system for CityRail. Additionally, research was undertaken to gauge customer preferences on different front panel designs for ticket vending machines and electronic gates. Staff and customer education programs are being developed and all staff in CityRail will be briefed on AFC.

The automatic fare collection system will make buying a ticket easier and less time-consuming, thus reducing the need for customers to stand in long queues. AFC will enable all customers to access ticket selling facilities on all stations at all times. All customers will have the facility to buy a ticket before they travel, and as 85 per cent of all tickets will be checked electronically, fare evasion and ticket fraud will be reduced dramatically.

Machine testing commenced in March and is being followed by machine installation throughout the system.

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A dazzling Queenslander re-birth

After a three month absence, Queensland's famous tourist train, The Queensland, is back after an amazing interior refurbishment created by Australian designer Denise Corcoran who was also responsible for the interior design of The Ghan.

The Queensland is one of Australia's tourist success stories.

In its six years of operation, more than 100,000 local and international tourists have enjoyed the 32-hour journey from Brisbane to the thriving tourist centre of Cairns.

1992, however, marks the commencement of a new era for the train and Australian luxury train travel.

The new-look Queensland will wind its way through more than 1000 kilometres of beautiful countryside from Brisbane to Cairns, with an extra hint of style. Each of the train's cars has been designed to reflect the essence of Queensland's scenery — from the magic of tropical rainforests and cane fields to the beautiful Great Barrier Reef.

But the brief to Denise Corcoran went further.

Her design concept has enabled Queensland Rail to place The Queensland at the top of the market as a 'five-star hotel-on-wheels' complete

with specially-woven carpets, classy sleeping cars, it's own exclusive restaurant, cocktail bar and silver service.

The bonus is that unlike any other hotel, the view is constantly changing on the journey from Brisbane to Cairns — from waving fields of sugar cane, and the depths of a wet tropic rainforest, to tall coconut palms and pineapple plantations.

The Queensland is fully air-conditioned with complete luxury facilities. The train provides sleeping cars for 84 first-class passengers, which include hot and cold showers reading lights, folding tables, wardrobes, washbasins and toilet facilities. It is a train that genuinely lives up to its name. Every element of the new design reflects either Queensland's magnificent scenery or its rich history.

The seven first-class sleeping cars, two lounge cars and specialist dining cars are arranged like chapters in the quintessential book of Queensland.

Colours of the tropics

Passengers who want to relax and have a quiet chat in the Daintree Lounge are in for a visual treat. The colours of the lounge have been specially selected to

reflect the shades of a tropic rainforest in North Queensland.

"We're using very cool lilacs and greens in the car to add to the atmosphere of the rainforest," says Denise Corcoran. "Even the carpet in the car is a soft, lilac fan leaf design. You'll be able to sit back and imagine the trees above you. In fact, it's the ideal place on the train for total relaxation."

The Canecutters Bar recalls the history of one of Queensland's early sugar cane pioneering families, with very "crisp, sharp greens throughout." And, when the time comes to don tails for dinner, the Coral Cay Restaurant represents another change of style.

"When we went out to the Great Barrier Reef before we started work on the design, we were so impressed by its beauty that it had to be a major theme," Ms Corcoran said. "We're using a collection of soft vibrant colours, very much like the colours you actually see under water at the reef. The colours in the car are primarily turquoises and mauves, with flashes of pinks and lilacs. We've also organised a glassprint artist to etch intricate coral designs on the glass screen in the restaurant."

Stepping in to the Coral Cay to choose something tasty from the menu



TRACKS



The Daintree Lounge (above) in cool lilacs and greens from the tropical rain forest. The Queenslander (right) traverses typical northern countryside on its 1000 kilometre run between Brisbane and Cairns. The Coral Cay restaurant (far right) represents a change in style and colour.



TAKE A LUXURY CRUISE



The Golden era of luxury train travel has finally returned. Travel onboard the magnificent new Queenslander and you'll experience an unforgettable journey between Brisbane and the tropical North.

In the tradition of grand rail travel, we'll pamper you in first class style all the way along Queensland's ever changing coastline to the state's northern capital, Cairns.



is one of the highlights of a journey on The Queenslander.

Each menu features the works of Queensland artist Jo-Ann Hook, who is renowned for her paintings depicting the Great Barrier Reef. The food itself is a culmination of the best produce Queensland has to offer from delicacies

of the sea to prime beef and local exclusive boutique wines.

Sleeping with history

Once a passenger retires for the night on The Queenslander, he or she is settling in for a fascinating slice of Queensland history. Each of the seven sleeping cars is decorated to celebrate

THROUGH THE TROPICS.



The new Queenslander is one train adventure that promises to stay with you forever. It doesn't take forever to book, contact your travel agent now, or phone Queensland Rail on 13 232 232 (within Queensland) or 07 132 232 (interstate). **Catch it and it will capture you.**

THE QUEENSLANDER



Melbourne's train of the future commences its run



The new-concept double decker passing an in-service single deck commuter train.

► FROM PREVIOUS PAGE

an important person or event in the history of Queensland.

There's James Cook, who in a curious twist of fate owed his life and those of his crew to a chunk of coral from the Great Barrier Reef. Fierce winds grounded the *Endeavour* on the Reef in June 1770, some time before his historic voyage to Sydney Cove. It was only 12 days later, when the stricken ship was beached in what became known as the Endeavour River, that the saviour was discovered — a huge piece of Queensland coral plugging the major hole could quite literally have changed the course of Australia's and Queensland's history.

Step into James Cook carriage on The Queenslander and you can almost smell the sea air. His famous liaison with the reef is chronicled on the walls, and the colours again recall the vibrant hues you see under the water.

The Matthew Flinders car celebrates both Flinders' triumphs and disasters. It

turns out that the reef which was so kind to James Cook nearly ended the career of Flinders in 1801. His exploration ship, *Porpoise*, was wrecked on the reef seven days after leaving Sydney. The young explorer had to make his way back to Sydney in an open boat, 700 miles along the coast. It was again fortunate for Australia that Flinders made it back, because he ultimately was the first man to use the word, "Australia", instead of the original name "New Holland."

One of Australia's most famous shipping mysteries is recalled in the Yongala sleeping car. The car tells the story of the Adelaide Steamship Company vessel which sank on a cyclonic trip from Brisbane to Townsville in the early 1900's, with 141 people on board. The only body recovered was that of the racehorse, Moonshine, which with its trainer was on its way to a race meeting.

The wreckage of the ship was gradually washed up on the Barrier

Reef, but to this day, no one can tell with certainty the cause of the disaster. Fishing legend has it that the *Yongala* is still circling five kilometres off the coast. One fisherman, Bob Hallon swore he saw the ship in 1923, but when he moved in to investigate, it disappeared, leaving only a very large area of strange discolouration in the water. After a night in the Yongala sleeping car people will no doubt have their own theories.

The other sleepers to choose from are the Mary Weston, the Phillip Parker King, the W. Saville Kent and the Coral Sea. The Coral Sea will be particularly popular this year as 1992 marks the 50th anniversary of the famous World War II battle.

With superb scenery, air-conditioned comfort, and a magnificent new interior design, the new era for The Queenslander will undoubtedly be shared by many more passengers in the years to come. □

DOUBLE DECKER



Platform level and hold-on bars, between upper and lower decks.

The Public Transport Corporation in Victoria is developing the next generation of trains for Melbourne, which will enable it to meet the growing demands of increasing patronage and improved service into the year 2000.

As part of this development it has introduced a special double deck train for testing and development. PTC believes it has most of the features that are needed in a modern train.

It is studying not only the engineering and technical suitability of the double deck concept, but also what rail travellers want in a modern train.

The PTC says it is determined that the next train it introduces on The Met must be reliable from the first day of operation, and must be designed to meet customer requirements.

The introduction of a special double deck train provides the opportunity to develop not just the engineering requirements, but also the requirements customers demand — the proper mix of seating and standing arrangements, the right number of doors and proper layout for easy access, facilities for people with disabilities, and quiet comfortable ride.

The train is likely to undergo a number of changes throughout its development and may be in and out of service as changes are made.

Once the trials are complete, the Corporation will then be in a better position to order its next generation of trains knowing what customers expect from a modern transport service and how to deliver it.

Double deck trains are seen as a way to increase passenger carrying capacity on the

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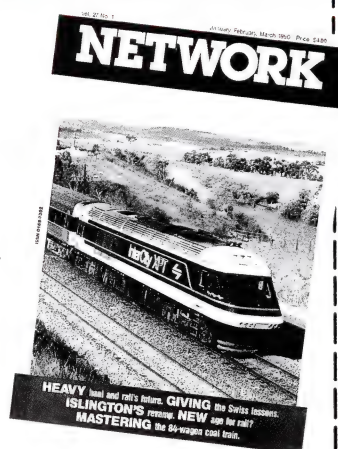
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The Met's double-decker (top) at Ringwood station for its launch by Transport Minister, Peter Spyker. Upstairs (centre) with curved scenic windows, and downstairs (lower) where there is more aisle space.

suburban rail network, with relatively minor changes to the existing tracks, and no major increase in the total number of trains using the tracks.

Additional land for tracks will not need to be purchased, bottlenecks around the system will not be created, and increased delays at level crossings will be avoided.

"However, if the double deck train concept is not found to be suitable for Melbourne, then other options will be looked at," says the PTC.

For evaluation

The train is running in service for evaluation. Passengers will be surveyed, and the performance of the train will be closely monitored. The train is operating initially on the Lilydale and Belgrave lines, the busiest lines in Melbourne. During peaks it will be coupled to a normal three-car single deck train for added capacity.

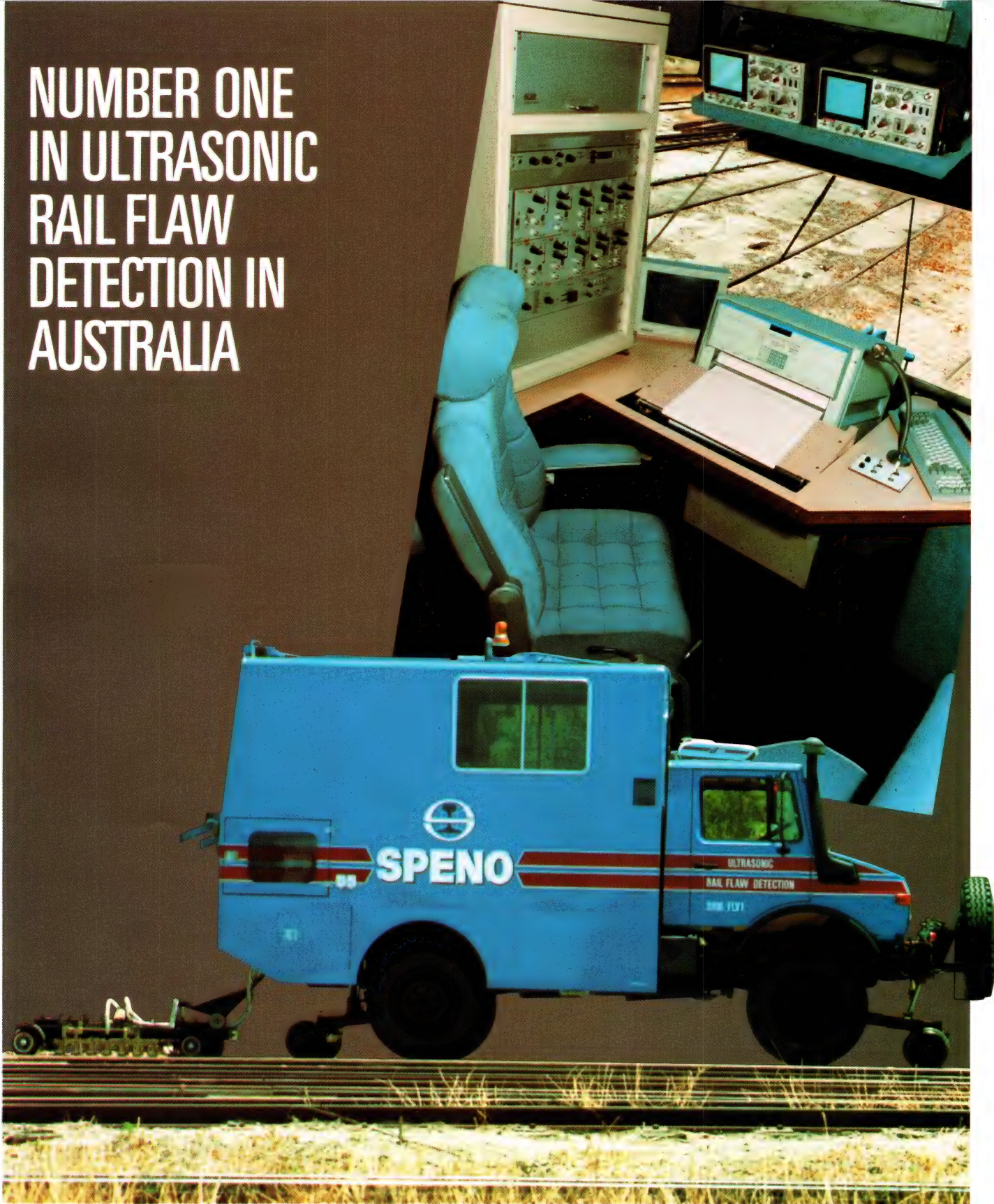
Occasionally it will be withdrawn from regular running for alterations and staff training, with final evaluation later this year.

The train was designed and manufactured in Australia by Goninan & Co. Pty Ltd of Newcastle. It has been designed with the customer in mind, with the features PTC believes could form the basis of the train of the future.

Apart from being double deck, there are many special features which differ from the current Met rail fleet.

- ☐ Doors open and close automatically.
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TRACKS



Flanked by flags at the launch ceremony for Melbourne's double deck commuter train, Mr John G. Fitzgerald, chief executive and director, A. Goninan & Co Limited, Sydney, outlines its potential.



- ☐ A new seat design — with a higher back. The seats are slightly firmer to be more resistant to vandalism.
- ☐ Plenty of luggage space under the seats.
- ☐ Wider aisles on the lower deck, providing more room for movement.
- ☐ Large tinted three-layered windows, providing good insulation against noise and heat.
- ☐ Hand-holds within easy reach of children.
- ☐ The development train has four carriages instead of the three used in current trains, but this may change.
- ☐ Automatic doors will sound an audible signal when opening and closing.
- ☐ Bright yellow hand-holds near doors.
- ☐ Seating for people with disabilities near the door area, so customers will not have to negotiate steps.
- ☐ Wheelchair areas near the driver's cabin, with easy access through the full width of the wide double doors. Boarding will be from the same position on platforms using existing ramps.

There are other features that customers may not be immediately aware of, but these have been included to provide better comfort and security.

A WORLD LEADER IN ITS FIELD, THE NEW AUSTRALIAN-DESIGNED AND MANUFACTURED DOUBLE DECK TRAIN IS ATTRACTING INTERNATIONAL INTEREST AND HAS STRONG EXPORT POTENTIAL.

A new type of bogie, gives a smoother, quieter ride.

There are concealed security cameras, non-slip flooring, which is easy to clean and on board emergency power supplies to ensure doors, ventilation and lighting continue to work, even when there is a power failure.

The train is air-conditioned.

The PTC believes the double deck train has most of the features of Melbourne's train of the future.

During the trials, PTC will be surveying customers. However, if rail users would like to provide comment and have not had the opportunity they are welcome to write to, The Manager, Double Deck Train Project, Public Transport Corporation, P.O. Box 605, Collins Street, Melbourne, Vic. 3000.

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TRACKS

South Dynon-

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MINISTER PAUL KEATING.

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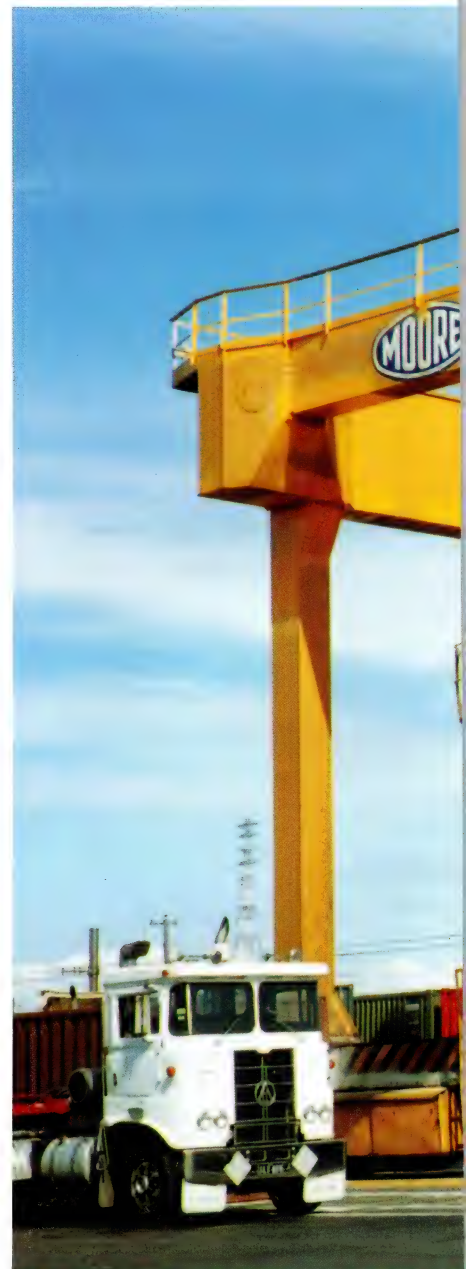
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Australia's Prime Minister, Paul Keating, within 48 hours of telling Federal Parliament that his government would provide additional funding of \$454 million for rail projects across the nation was himself walking around the South Dynon rail freight terminal in Melbourne.

Here he saw for himself where and how some of that money would be spent - \$20 million of it to lift the terminal's capacity by 50,000 containers to around 300,000 a year, and another \$5 million for a direct link to the nearby Swanson and Appleton docks.

Less than half a century ago this was Melbourne's rubbish dump where scattered fires burned through the night and spread their acrid smoke across



South Dynon Road and where derelict people made their homes in old bits of tin and timber dragged together with difficulty.

An amazing transformation has taken place at South Dynon. This flat, reclaimed piece of land with the profile of tall city buildings just a short distance off its eastern boundary is the focal point of national attention.

Prime Minister Keating's visit underscores the growing significance of South Dynon as an efficient cost-effective freight handling centre in the south for the National Rail Corporation. From here a new standard gauge track to Adelaide will make through trains across Australia linking all capital cities a reality.

The implications of this in terms of freight handling and fast cost-efficient movement into and out of sea ports and

from door to door are enormous. The rehhandling of freight at Islington in South Australia will no longer be necessary for Perth-bound goods.

Today, South Dynon is clean-cut, modern, and a pleasant place. It is well-ordered in its layout of containers, vehicles and handling machinery and equipment. Prime Minister Keating could not fail to be impressed.

Better utilisation

V/Line Freight's operations manager at the terminal, Adrian Ponton, says most of the loading on the Adelaide superfreighter each night is for trans-shipment, and therefore, without the bogie change at Islington there must be better utilisation of rolling stock and control of resources.



TRACKS



FREIGHT TRAINS, TWO FOR ADELAIDE (LEFT) AND ONE FOR SYDNEY DEPART DAILY FROM SOUTH DYNON. THOSE TO ADELAIDE RUN THE BROAD GAUGE.

WIRE COILS (RIGHT) AWAIT SHIPMENT FOR THE BROKEN HILL COMPANY PTY LIMITED THE RAIL SERVICE'S LARGEST CUSTOMER.



“It also means you can set up a cascading effect,” he said. “At the moment the train that comes in from Adelaide must return there. You can not re-allocate it and send it to Sydney because there is a six and a half inch (16.5 cms) difference in track.

“With a terminal this size (it is 1.5 kilometres end-to-end) you have the ability to consolidate freight and it does not matter whether a customer has one container or 50 containers. You can build them into a train load as an efficient transport unit.

“We operate containers six, nine and twelve metres in length and the equipment we have can do caliper lift or top lift.

“This year, on the basis of current trends, we can expect to handle about 185,000 TEU through South Dynon,” he said. TEU stands for 20-foot (six point one metre) equivalent units. “In addition, there will be 20,000 TEU through the Dynon terminal across the road.” As part of the South Dynon expansion program it is proposed to relocate Dynon container traffic into South Dynon before the end of this financial year.

Road transports have a fast turnaround. On the basis of sampling 30,000 trucks for the year to date some 91 per cent of them went through the terminal in 60 minutes or less. Some 85

per cent of the trucks were through the terminal in 45 minutes or less. With the introduction of CHICS (Container Handling and Inventory Control system) – see *Network Vol. 29 No. 1* – the turnaround for trucks will be even quicker.

The picture at South Dynon is almost the same every week day – road transports coming and going, huge overhead gantry cranes on their own steel tracks and with sirens wailing softly as a safety alert every time they move, containers lifted from trucks, and gently set down on rail wagons, giant fork lifts poised like preying mantis stacking containers on numbered parking bays.

Waratah

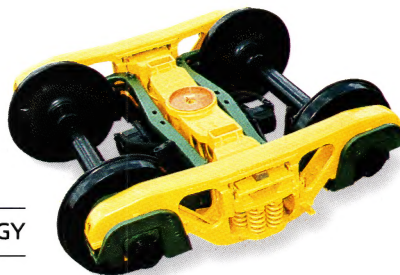
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TRACKS



Rail freight across Australia will change dramatically in the next few years. With the change will come even better facilities and services for passengers as well.

IN THE NEXT EDITION

DID YOU KNOW THAT Westrail in Perth has its own art collection – a series of paintings now acknowledged as making a valuable contribution to the local history of rail?

Paul Thomson, curator of artworks at Curtin University of Technology, Perth, discusses the Westrail art collection in the next edition of *Network Magazine*.

You'll see for yourself some fine examples of railway art by people who loved and cared for the trains of the west.

There's lots more interesting reading and pictures in the July edition of *Network Magazine*.

Order your copy now from your newsagent or by completing the subscription coupon on page 53.

Four trains each night

Then at around 6 pm the locomotives come down the track and hookup. There are two services, both 85 TEU, to Adelaide each night, a Sydney service which is 90 TEU, and Brisbane service which is 100TEU. The only difference on Saturdays is one less service to Adelaide.

The Superfreighters are huge and powerful and they can move freight like no other means of transport.

South Dynon's day does not finish there, however. There are ad hoc freight trains to Wodonga. The Adelaide rake goes off every night consisting of about 15 flat tops each about 19 metres in length and carrying another 45 TEU; this train can have as few as five wagons or as many as 30 wagons. Then there is the Brisbane overflow train usually four nights a week which averages 15 wagons.

The Superfreighter train sets are broken up only for repair purposes. Much of the wagon maintenance is done on site without having to remove the wagons from the consist. The days of pulling a wagon out of line and sending it to the workshops to have a bolt replaced are gone forever.

Largest single customer of the Australian Government railway system is BHP, the Broken Hill Proprietary Company Limited, which uses South

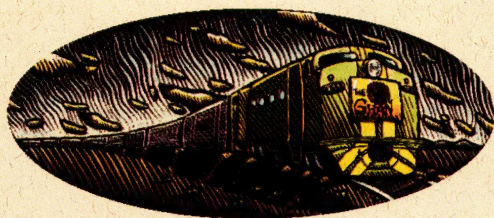
Dynon as part of a recently-signed contract with the Public Transport Corporation of Victoria, Australian National and the State Rail Authority of NSW for the transport of slab steel feedstock from Port Kembla and Whyalla plants to Western Port in Victoria.

The 10-year contract, the largest general freight contract awarded to rail, involves 450 train services a year and the movement of 800,000 tonnes of steel annually. The agreement is performance based with regular monitoring and incentives factored into the freight rates.

BHP itself is one of Australia's private railway operators and contributed substantially to the pioneer development of rail services – *Network Vol. 28 No. 3*.

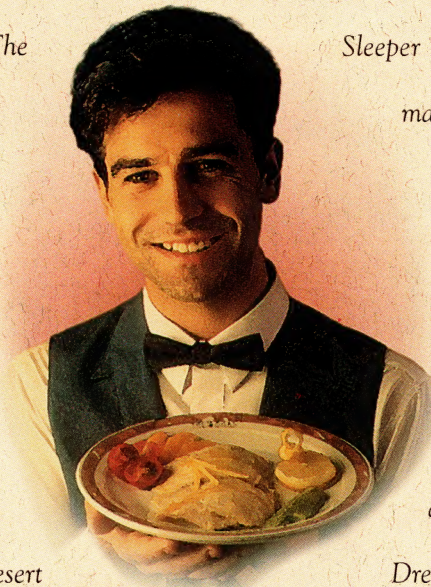
Western Port is the company's principal sheet steel manufacturing plant. The coils of sheet steel are used in a range of manufacturing processes and are a valuable export commodity for Australia.

The future for South Dynon rail freight terminal is assured with the introduction of new technology, a more streamlined approach to handling freight and turnaround of road vehicles, and a continuing partnership with companies like BHP and freight forwarding agents in the recognition that railway services are an important part of the transport infrastructure of Australia. □



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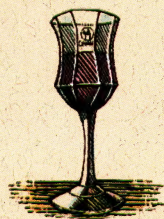
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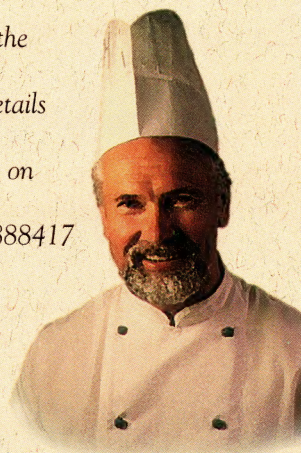


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